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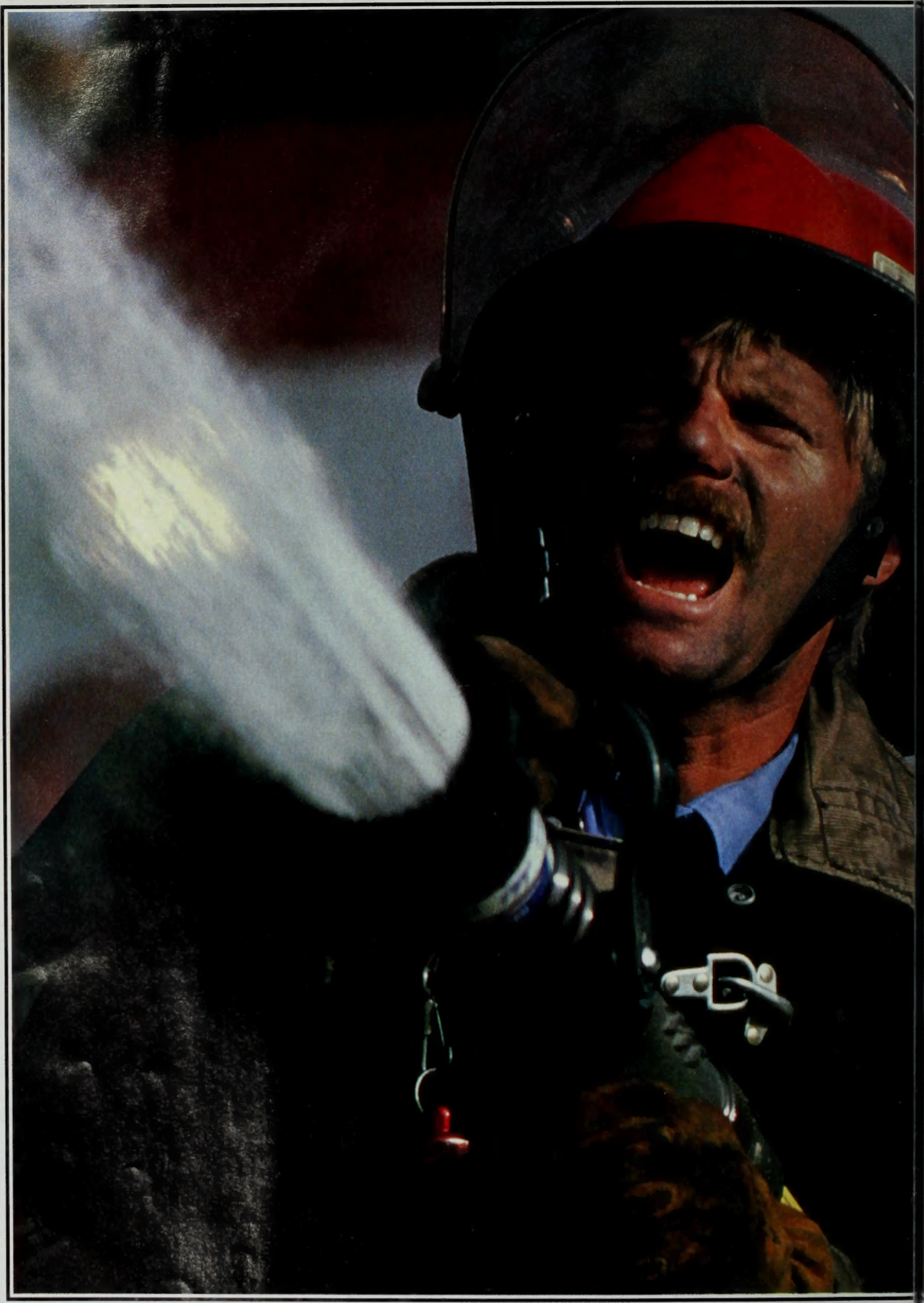
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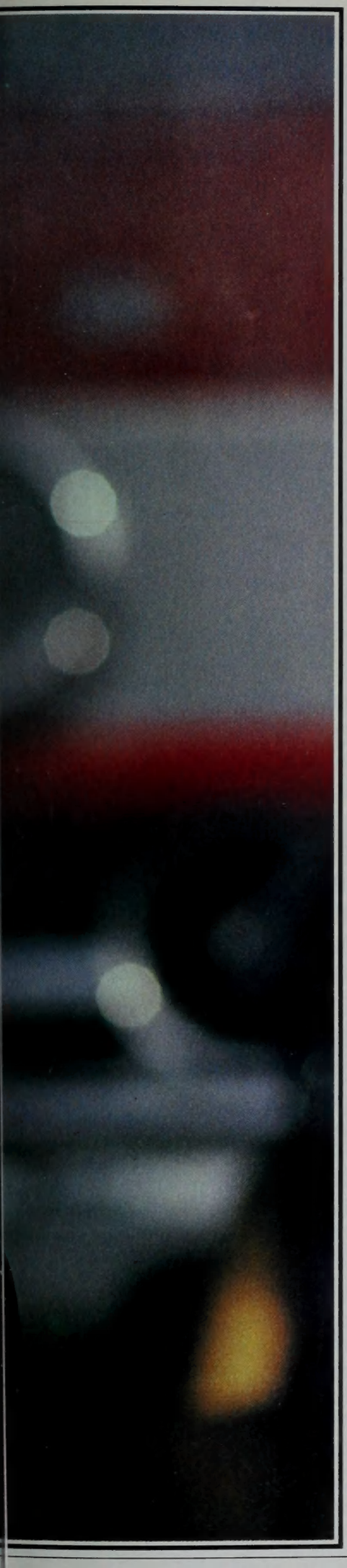
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Salary Woes

It was very interesting (and somewhat sad) for me to read two of the articles in RECORD. In "Profession: What's an Architect Worth?" [March 1994, page 32] you presented clear, concise reasons for the low fees and salaries that architects seem to command. Further in the issue, in the article "Break Out" [page 82], about a new police station in New York City, it is stated that the project architect kept a full-time representative on-site during construction without getting reimbursed for this extra service. Perhaps somewhat unintentionally, you presented another case in which the architect is his/her own worst enemy regarding worth of services and subsequently the level of fees.

Perhaps you should reprint your "Profession" article in much larger type so that any architects who dislike reading the "fine print" of business-oriented articles will give it a second glance.
Richard Vince
Vince & Petrocci, Architects
Ridgewood, N. J.

With recent cover stories of professional magazines asking if the profession can be saved, complacent, reaffirming studies such as the one done by Weld Coxe [RECORD, March 1994, page 25] are a surprising show of either naivete or pure ignorance. Ten years of personal experience in the profession and that of my peers demonstrates that most assuredly "star" architecture firms do, almost universally, exploit labor.

Many firms have the attitude that if you don't come in on Sunday, don't bother coming in on Monday, and compensation for this overtime in any form is virtually unheard of. The argument about being a graduate atelier does not hold water. Most practicing architects have had at least three and a half years of graduate education—not two as Mr. Coxe suggests.

If graduate architects are not well trained to occupy their profession at graduation, then the schools need to rectify this. It should not be justification for architects becoming white collar migrant workers. One wonders why Mr. Coxe just doesn't think exploited labor represents the mainstream. Is this just a gut reaction, wishful thinking, or he can't imagine these cordial architects he speaks with acting in this manner?

There is a tone to his article that architects get what they ask for. This may be the one point on which I could agree. Exploitation of labor within the office is tied to the same unethical motivation to cut fees to get a commission. The AIA seemingly does little to elevate the professional behavior to architects. Its fees are out of line with the salaries of many architects, making it too expensive to join, and it is completely ineffectual as an organization when compared to, for example, the American Medical Association. Can you imagine a doctor undercutting a colleague's fee for surgery? The current professionalism of many architects belongs in the yellow pages of the telephone book with cut rate divorce and personal injury lawyers.

Mr. Coxe has done us no favor by reaffirming the current "professionalism" of architects. The ethics of the profession need to be addressed. What kind of precedent is set for young architects when they see their work being billed to a client, but not

Continued on page 21

Through May 22
"A Cartographic Vision of Japan," Japan Society, New York City; 212/715-1155.

Through July 24
"Urban Revisions: Current Projects for the Public Realm" exhibition with 15 innovative urban-planning and design projects on view, Museum of Contemporary Art, Los Angeles, May 15 to July 24; 213/621-1750.

Through September 18
Exhibition of paintings, drawings, sculpture, and rare books trace Edith Wharton's literary career. Walking tour on May 21 through mid-19th-century "Ladies' Mile" retail district from Union Square to Madison Square in New York City. National Academy of Design, 212/369-4880.

May 2-3
"Effective Lighting Retrofit Solutions" two-day course sponsored by the Association of Energy Engineers. Cost: $695 for members, $795, others. Holiday Inn Meadowlands, Secaucus, N. J.; call 404/447-5083 .

May 19
Lecture on New York City's theaters, "Encore or Final Curtain? The State of Theater in the City of Theaters," moderated by Laurie Beckelman, chairman of the Landmarks Preservation Commission. Cooper-Hewitt Museum, New York City, 212/860-6868.

Competitions
- Concrete Masonry Design Awards Program for California and Nevada; registration deadline is May 2. Call 916/722-1700.
- National Institute for Architectural Education entry deadline for the William Van Alen International Student Competition is May 6. "A Companion to the Chrysler Building" is the designated project. Call 212/924-7000 for eligibility requirements.■

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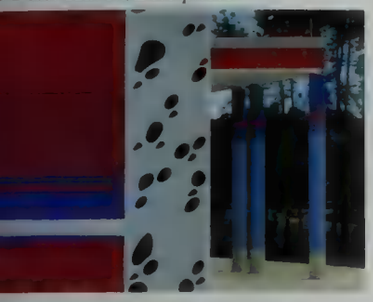


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Venturi, Scott Brown's first built Disney-sponsored project is a ire station (pages 94-97).

Next month

Building Types Study 717 nfrastructure

Features include buildings by Holt Hinshaw Jones, Nicholas Grimshaw & Partners, Perkins & Will.

Also in June

- Results of our computer delineation competition.
- Software reviews.
- The architect's role in disaster mitigation.

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Awards Without Meaning

Every architect likes public recognition. It acknowledges the results of vigorous effort, makes for a good image with clients past, present, and future, looks good in a qualifications package, sparks up morale, and motivates staff to greater effort. One form of recognition is the design award. These are given to architects (and sometimes clients) by professional societies such as AIA, CSI, NOMA, and others at national, state, and local levels; by building industry trade associations; by government agencies at all levels; by local chambers of commerce and various civic groups. But sadly enough there is now such a proliferation of awards that award-giving bodies are often at wits end trying to match potential winners to a long list of honors. There comes a point where the selection process looses meaning. It is as though in a race there is a prize for every contestant. Value is diluted through an inflation of honors—too many prizes chasing too few eligible candidates. It is time for every award-giving panel to look into its soul and make two serious decisions: 1) rather than reach, should we *not* make an award this year, and to drive the point home, issue a strong statement as to why not?, and 2) consider whether a particular award has outlived its usefulness and should, in the lingo of Congress, be "sunsetted." One year the City Club of New York got infinitely more mileage out of omitting its annual Great Architecture award than it would ever have gained by granting it.

Pruitt-Igoe, Act II

It is almost a generation ago that the utter failure of low-income housing planning and design was symbolized by the demolition of the Pruitt-Igoe public housing project in St. Louis. Now, late this winter, four bleak 13-story towers in Newark, New Jersey, known as Christopher Columbus Homes, were leveled. They were closed up in 1990 after an onslaught of crime and vandalism had made them unlivable. Unfortunately, for every project destroyed because it totally fails to meet the needs of its clientele, hundreds remain to plague their tenants and the community. A new wave of soul-searching, which reaches from the White House to all levels of our society, now tackles the constitutional issue of conducting "sweeps" without warrants to assure the safety of occupants. Yet architects such as Oscar Newman, author of the classic work *Defensible Space*, cite cases in which intelligent measures, not always calling for major extra outlays, were able to deal with a low-income housing challenge. In inner-city Dayton, Newman served as consultant on a scheme that took the crime-ridden Five Oaks neighborhood and out of the street grid created ten mini-neighborhoods of about 100 homes and apartments, each with limited-access streets. Within 11 months, crime is said to have declined by 26%, violent crime by 50%, and housing values rose by 15%. In Yonkers, New York, 200 public housing units were placed in white middle-income areas, using a low-density, scattered site townhouse format with no more than 50 units on each of seven sites. Five of the sites have been occupied for nearly two years. There has reportedly been no increase in crime above that of surrounding areas, no loss in property values, no white flight. So if demolition of Christopher Columbus Homes was the end of Act II of a dismal record of public housing, there's hope that Dayton and Yonkers and the many other resourceful solutions published in recent years in RECORD and other media, signify a happy Act III in this long-running drama. *Stephen A. Kliment*

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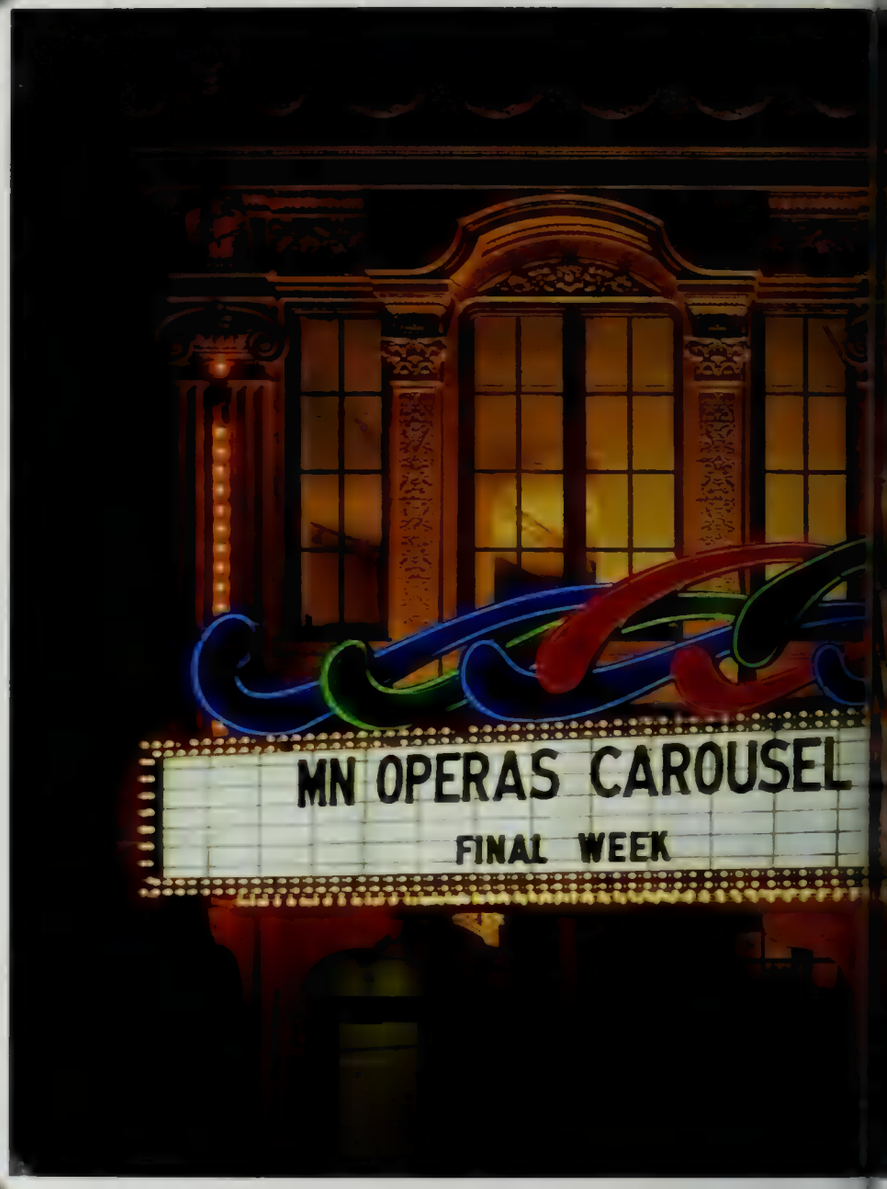
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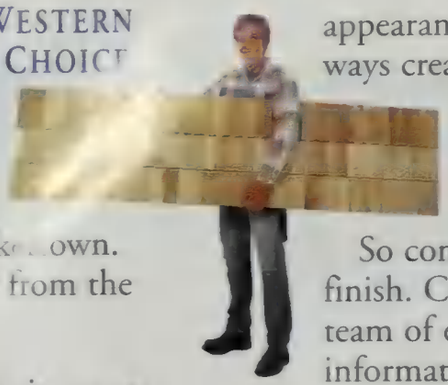
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Austria

Vienna Plan Is in Time-Warp Tradition



rtner & Ortner's plan to expand Vienna's useum quarter plays on the city's seldom-knowledged 700-year tradition of breaking th its own past in order to create new aces for "cultural nomads"—from the large ternational exhibits that had been bypassing the city to young artists experimenting with small or temporary projects. Four new buildings (lit in model) will share the embrace of the 19th-century Imperial military stables, which will be adapted for such new uses as workshops and an architecture center. ■

Houston

Texas: A Park for The Next Century

Houston's threadbare Hermann Park is undergoing its first master plan in 60 years. Funded by the non-profit Friends of Hermann Park, Laurie Olin of Hanna/Olin will address traffic and parking, drainage and erosion, expansion of existing facilities, and unification of the park's attractions into a greener whole. In 1993, the 407-acre park attracted 5.2-million visitors to a zoo, a Japanese garden, the Museum of Natural Science, Miller Outdoor Theater, a garden center, and the first racially integrated public golf course (1930) in the U. S. *Gerald Moorhead*



New York City

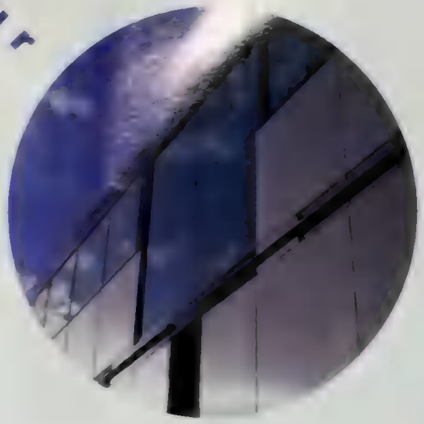
Addition to Brooklyn Elementary School Marks a Homecoming for 1907 Schoolhouse Gothic Style



Hirsch/Danois' 50,000-sq-ft addition (right side of rendering, left) to PS 152 is adjacent to the Georgian-and-Modern Brooklyn College campus but follows the spirit of C.B.J. Snyder's 1907 idiosyncratic Collegiate Gothic original (left side of rendering). The three-story addition to the K-5 school will house cafeteria, kindergartens, library, art and science centers, administration and community spaces. To include major renovations to the original structure, the project will create a block-square facility with simplified, ADA-compliant circulation. ■

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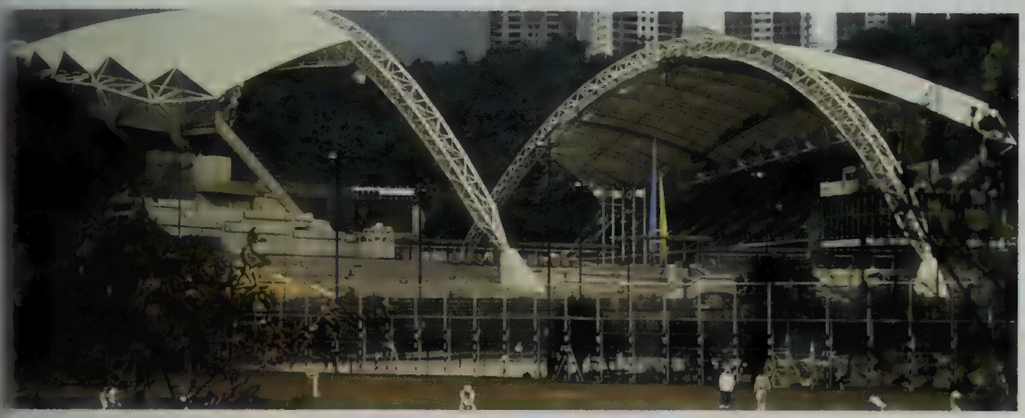
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MITSUBISHI
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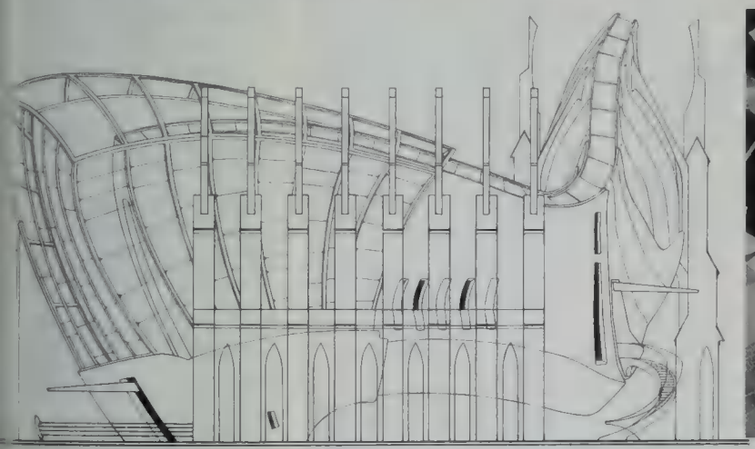
eashell-Shaped Stadium Spills ports and Concerts into Cityscape

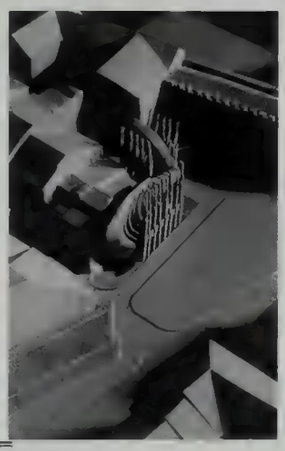
ıe new Hong Kong Stadium designed by)K Sport is, at 40,080 seats for soccer and gby and 50,000 for concerts, more than 40 rcent larger than its 1953 predecessor. ıclosed on three sides by higher land and the fourth by a monumental plaza staircase acting as a threshold to the city, the stadium has a Teflon-coated reinforced glass-fiber roof whose pleated arches allude to surrounding hills and, when seen from the air, resemble an opening seashell; the roof takes on a pearly glow when lit from within. ■



oland

Visionary Monument for the Astronomer Who Shook the World





vafong Nonchi Wang has won the Grand ix at the Fifth International Biennale of chitecture in Cracow, with his plan for a ınetarium/exhibition hall as a monument to pernicus, who was educated in Cracow tween 1491 and 1495 and set in motion the wnfall of Ptolemaic astronomy by postulat- that the earth revolves around the sun. e concept honors the astronomer by ecting Euclidean geometries, which, Wang s, "can't deal with the complexities of ure," in favor of chaos theory. At the same ıe, he honors the site, near two Gothic cathedrals, by supporting the structure with flying buttresses, citing the rationalism of Viollet-le-Duc rather than what he calls the "irrationalism of deconstructionism." The photo above right shows the monument in the center of the site model. Wang, founder of Amphibian Arc in South Hadley, Massachussetts, believes that Copernicus's "not-necessarily-orthodox spirituality was central to his discovery of heliocentrism." The Association of Architects of the Republic of Poland is shepherding the project through the approvals and funding processes. ■

Massachusetts

Mini-Revolution at The Post Office



©Warren Patterson

Revolutions historically tended to begin with a bloody take-over of a post office, but a recent coup in the City of Lynn involved the restoration and conversion, by the Design Partnership of Cambridge, of an 1897 downtown post office into a multi-service center for homeless and indigent people. The Romanesque Revival landmark contains ■ 40-bed shelter, a two-story full-service "soup" kitchen seating 160 in the former main postal area, a satellite health clinic, and office space for other services and outreach agencies.■

Italy

Marble Prizes Awarded

The Internazionale Marmi e Macchine of Carrara awarded its 1994 Marble Architectural first prize to Marco Tomasi for a mausoleum in Bergamo. Paolo Giordano won for interior design, and Mario Lini for urban landscape. Wilhelm Kucker chaired a jury comprising Gianni Bowri, Italian National Council of Architects; professor Bruno Viviani, Florence University; Francis Rambert of *d'Architectures*; Clare [illegible] of *Building Design*; and James S. Russell of ARCHITECTURAL RECORD. North American projects will be juried in 1997. ■

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esign

Briefs

rm of the Year
hlin Cywinski Jackson has received the A 1994 Architecture Firm Award, given nually "to a practice that produced distin- ished architecture consistently for at least years." Since its 1965 founding by Peter hlin and former partner Richard Powell, e firm has won over 100 national, state, and gional awards, and has expanded to a 52- rson staff in offices in Pittsburgh, iladelphia, Wilkes-Barre, and Seattle. hey create a sense of habitation by erging the technical aspects of building th a great sensitivity to landscape and wer of place," the AIA Honors jury noted. e firm's drawings will be on display at ttsburgh's Heinz Architectural Center m June 14 to October 2, and at the Univer- y of Washington, Seattle, in January 1995.

king on Disney World
ntertainment mogul H. Wayne Huizenga ns a $1 billion sports/tourist complex called ockbuster Park near the Everglades to lude a retractable-dome baseball stadium, oncert/hockey arena, a theme park, movie idios, hotels and resorts. HOK and Ellerbe cket, respectively, are providing stadium d arena cost estimates for the development plication to the state. Conservationists arge the project endangers the watershed.

oves
Robert F. Ladau, former head of Emery th & Sons Facilities Management/Interior sign, is now president of SLCE Facilities anagement/Interior Design, a new firm iliated with Schuman Lichtenstein aman Efron.
Hammel Green and Abrahamson founder rt Green has retired from active practice t will continue in a public-relations capacity. he AIA has named Philip Schreiner to the wly created post of vice president of mber communications.

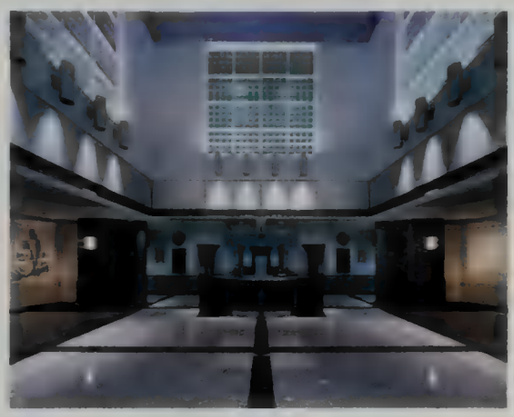
blication
CARB has revised its "Architect Overseas actice Standards." For copies, call 2/783-6500.

membered
ohn Yeon, known for regional-style North- st houses, died in March at age 83. His 37 Watzek House is listed on the National gister of Historic Places.
onsulting engineer Anton Tedesko, an ert in thin-shell reinforced concrete con- uction, died in April at age 90.■

Kansas City

Justices Aid and Abet Architects in Clipping Courthouse Costs





© Douglas Kahn photos

Just when Congress seems bent on curbing the federal judiciary's costly tastes, Gossen Livingston has brought in a courthouse at $102 a sq ft, on average a third under recent court projects. "It will provide a comfortable, dignified setting," said U.S. District Court Judge Earl E. O'Conner of the design for shared courtrooms and libraries. "I don't think any of us were interested in having ornate, ostentatious chambers." The firm did solicit their opinions on proportions and distances in a mocked-up courtroom. ■

California

All the School's a Stage For Teenage Students



The Diamond Ranch High School has been designed by Morphosis to follow the amphitheater-like contours of its Pomona location: 25 acres of playing fields on the lowest level and a school building rising two stories, with a mini-amphitheater formed by a monumental outdoor staircase that cuts through the structure and leads to a top-level roof terrace and the football field whose seating area continues the climb up the slope. The gymnasium mimics the hillside with a pitched roof that undulates with the terrain. ■

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Continued from page 4

being compensated for in their paychecks? The AIA needs to be accessible to and responsible to those it portends [sic] to represent. It can then be effective in raising the standards of practicing architects to a point where they can actually be a profession. If students are coming out of schools so poorly educated that they don't deserve to be paid a living wage, then the quality of the expensive education must be improved to where it is worth something. The cycle has to be broken to prevent the profession from becoming only those who are independently wealthy or sweat-shop operators.

Susan Emmons
Los Angeles

Weld Coxe replies:
Ms. Emmons does not tell us the firms where she has worked or the salaries she has been paid/offered, so it is impossible to know if she and I are comparing the same realities. I have no doubt some firms have treated employees as she describes: There are too many stories told for it all to be rumor. However, we have consulted with more than 1,000 different firms in 49 states over the past 25 years, and I have yet to personally encounter the conditions she describes. Perhaps firms that engage management consultants are a different group, but the fact is the great majority of firms we deal with do treat employees and pay salaries as described in the article.

AIDS Awareness

I wanted you to know how much I appreciated RECORD running an article about AIDS in the office. I agree that most offices, including this one, are compassionate. However, when offices are discriminating, it's often beyond an individual's resources to challenge them. What is so strange is how a person, particularly one who is embarrassed by their illness, simply disappears. On a practical level, employees can donate a portion of their vacation time to an individual who is ill. In this way we were able to give one of our employees over $20,000 when he was unable to work. There may be a future article that examines in more depth how offices have dealt with insurance coverage, disability, part-time work, and so forth.

Kenneth Caldwell
Marketing Director
ELS/Elbasani & Logan Architects

Preservation Plaudits

Your article, "Preservation's Vast New Horizons" [RECORD, February 1994, pages 24-27], is excellent. You have captured both the opportunity and challenge of the Steel Industry Heritage Project. I would like to clarify that the remark regarding AIHP in brackets within my quote ["a particularly scattershot federal initiative...."] is the editor's, not mine.

A small correction: The Southwestern Pennsylvania Heritage Preservation Commission is the coordinator of America's Industrial Heritage Project (AIHP), but not the National Road project or the Steel Industry Heritage project. A separate voluntary group, the Western Pennsylvania Heritage Coordination Group, has been established to informally coordinate Southwestern Pennsylvania activities of the Pennsylvania State Heritage Parks Interagency Task Force, Southwestern Pennsylvania Heritage Parks Interagency Task Force, Southwestern Pennsylvania Heritage Preservation Commission, Steel Industry Heritage Corporation, and the National Park Service.

Donald K. Carter
UDA Architects
Pittsburgh

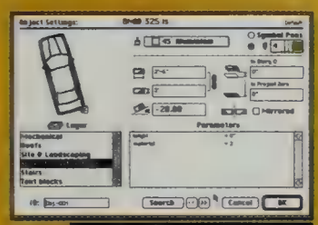
Continued on page 44

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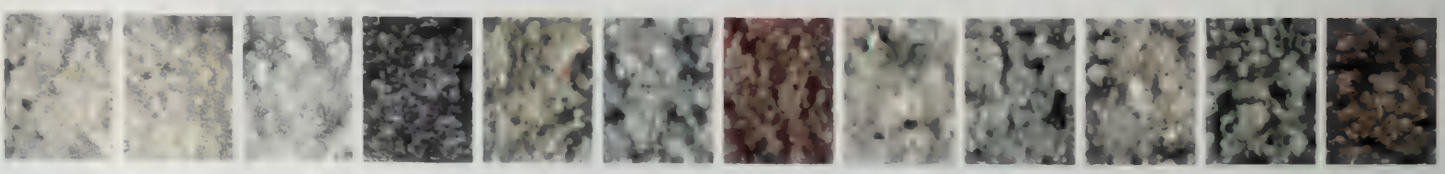
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Why Are Architects So Confused?

What Is Architecture?: An Essay on Landscapes, Buildings, and Machines, *by Paul Shepheard. Cambridge, Massachusetts: MIT Press, 1994, 128 pages, $10 (paper)*

The Roots of Architectural Invention, *by David Leatherbarrow. Cambridge, England: Cambridge University Press, 1993, 242 pages, $65.*

Reviewed by Nancy Levinson

In a simpler and more confident era, the reader of a book called *What Is Architecture?* might reasonably have expected a genial overview, a *Britannica*-like survey that progressed dutifully from Mesopotamia to Manhattan. These being volatile times, however, *What Is Architecture?*, by British architect Paul Shepheard, is a sparsely illustrated, very personal essay that assumes no consensus other than widespread bewilderment; as such, it is an inspired and perceptive performance.

Shepheard's premise, which few will dispute, is that confusion now beclouds his subject. Today, he notes, "...on the question, 'What is architecture?' there is a hubbub, a furor of nonconsensus." This hubbub is, he suggests, all too understandable; in this century architects have witnessed a rapid succession of styles in both building design and theory, with the proponents of each new style asserting the intellectual and artistic sterility of

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London and St. Paul's Cathedral in December 1940 during the Blitz, from What Is Architecture? *by Paul Shepheard.*

their predecessors. Although generally nonpartisan, Shepheard finds little merit in recent critical efforts to explain architecture in terms adapted from literary theory. Throughout, he takes pains to distinguish what we think and write about architecture from architecture itself—from what he calls "the material facts... [which] exist because they exist, not because we subscribe to their meaning." Or, as he explains, "'What is architecture?' is not the same question as 'What should architecture be?' or 'What is architecture like?'"

Adherence to "material facts" does not limit the author's range of references. His search for answers begins with Vitruvius and draws in Brunelleschi, Alberti, Palladio, Wren, Ruskin, Frank Lloyd Wright, and Le Corbusier, among others. Along the way the discussion ranges outside architecture, encompassing Goethe, Schiller, Robinson Crusoe, the Wright Brothers at Kitty Hawk, the *Origin of Species*, war machines of the Pentagon, conversations with the author's friends, even one crude but funny joke. Admitting a fondness for both analogies and trilogies, Shepheard constructs several provocative arguments that explore how architecture connects, on the one hand, to landscape and to machines, and, on the other, to drama and to music.

All this intellectual trekking is as pertinent as it is entertaining. Given his book's title, it isn't surprising that Shepheard prefers good questions to easy answers. By sharing his own journey, he will surely inspire readers to embark on their own.

Style over substance?

In *The Roots of Architectural Invention*, David Leatherbarrow is also more concerned with questions than answers. He begins this erudite book by stating that architects today are unhealthily obsessed with style, with "the stylized image." As a result, he says in his introduction, "The art of building has been transformed into a business of self-display and promotion through the design and construction of figurative motifs."

Leatherbarrow then devotes the rest of the volume to arguing that contemporary architects rarely ask the kinds of fundamental questions that, in his view, have been and remain essential to the creation of important architecture.

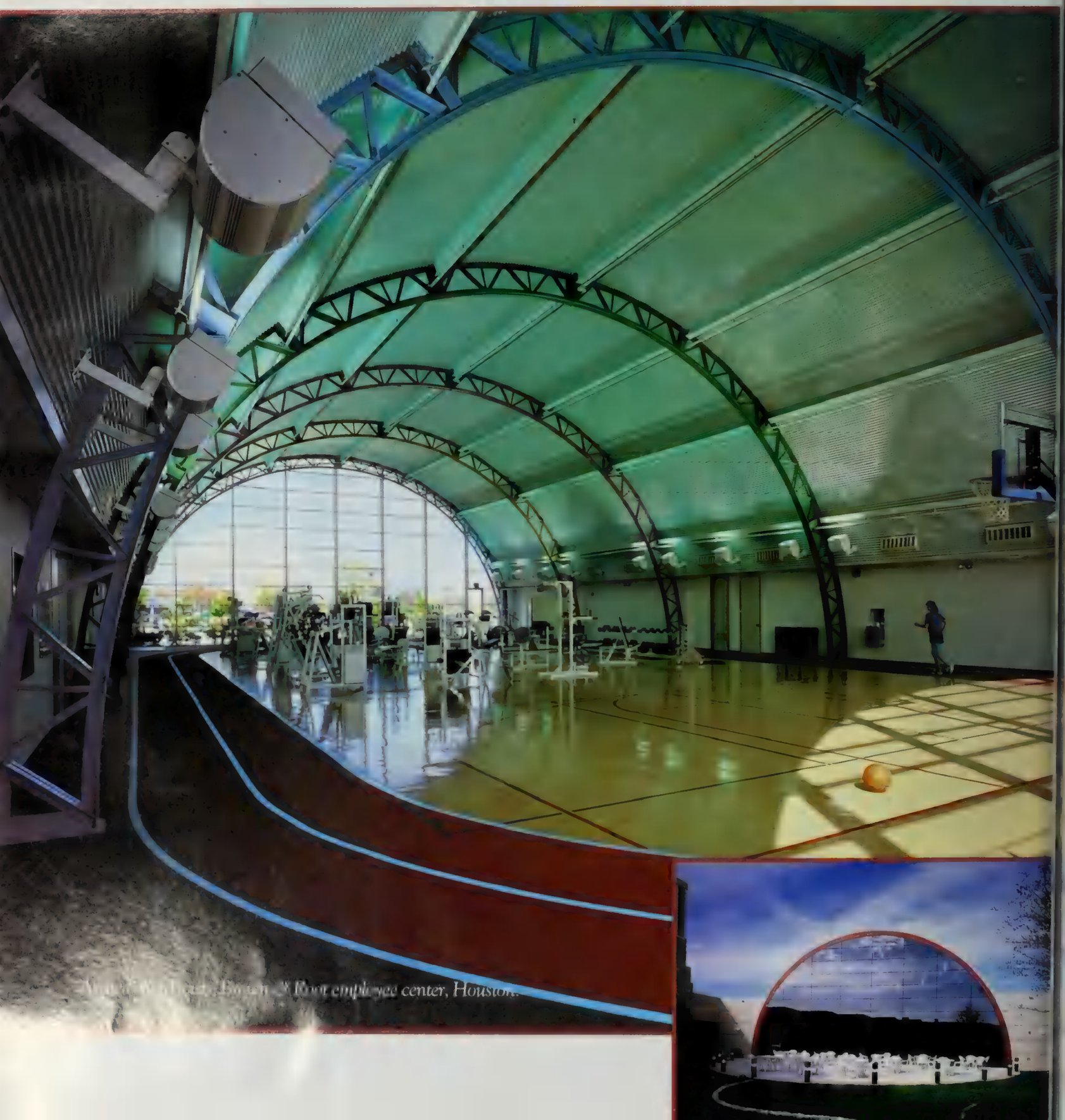
The Roots of Architectural Invention reveals and explores these questions through discussions of three architectural topics: site, enclosure, and materials. Leatherbarrow, a professor of architecture at the University of Pennsylvania, develops his arguments about each by examining diverse and influential architectural theories, including those of Vitruvius, Alberti, Michaelangelo, Claude Perrault, Gottfried Semper, Adolf Loos, Christian Norberg-Schulz, and Aldo Rossi.

To give a sense of Leatherbarrow's method, the book's first section prods us to examine how we see site. Do we define site as space? As perimeter or context? Or as the land itself? Leatherbarrow suggests that the best architects transcend the limits of typical project thinking by understanding site not as something given, but as something to be invented. As an example, he describes how Borromini's design for the Casa dei Filippini in Rome reimagined and remade its environs.

Leatherbarrow's learning, his knowledge of the canonical works of architectural theory and classical philosophy, informs every page. No doubt the book will send some architects—as it did this reviewer—to their bookshelves, searching for copies of Vitruvius unopened since school. But one virtue of this clearly written book is its attraction to nonacademic readers, i.e., to the majority of practicing architects. This clarity is crucial, for *Roots* is concerned at heart with the design and construction of buildings, not with our interpretation of them.

What Is Architecture? and *The Roots of Architectural Invention* complement each other in interesting ways. Although *Architecture?* is conversational, intimate, and allusive in tone, and *Roots* scholarly and complex, both are animated by a passion to return architectural discussion to matters specifically architectural. ■

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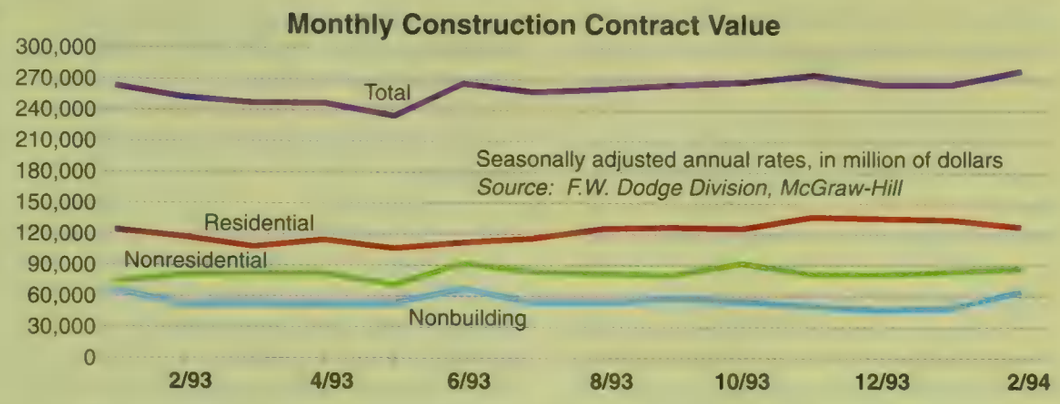
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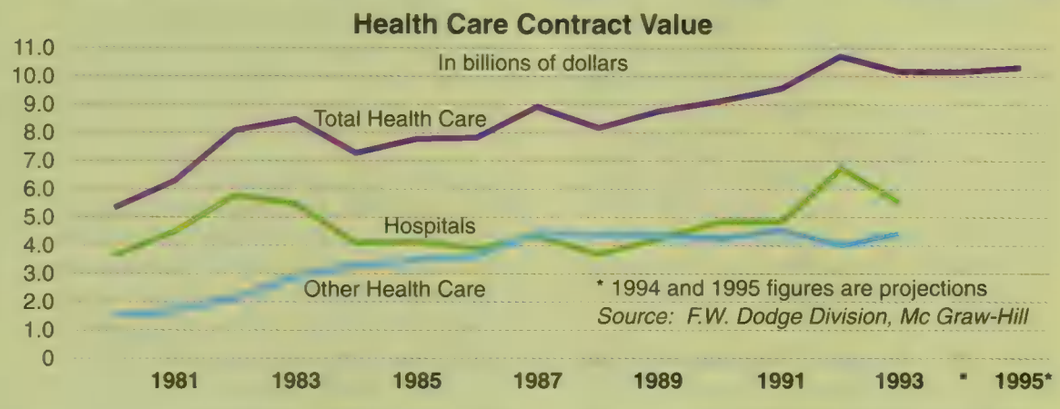
nresidential construction shows gains

struction contracting in January and ruary showed gains in non-residential non-building categories, both of which e lagged in the recovery. While housing ped (3 percent in January and 6 percent ebruary, attributed to severe weather), -building–led by highways and other lic works–gained substantially. Categories on-residential construction that showed ngth were stores, schools, health-care, lic-administration facilities, and correc- al facilities. ■



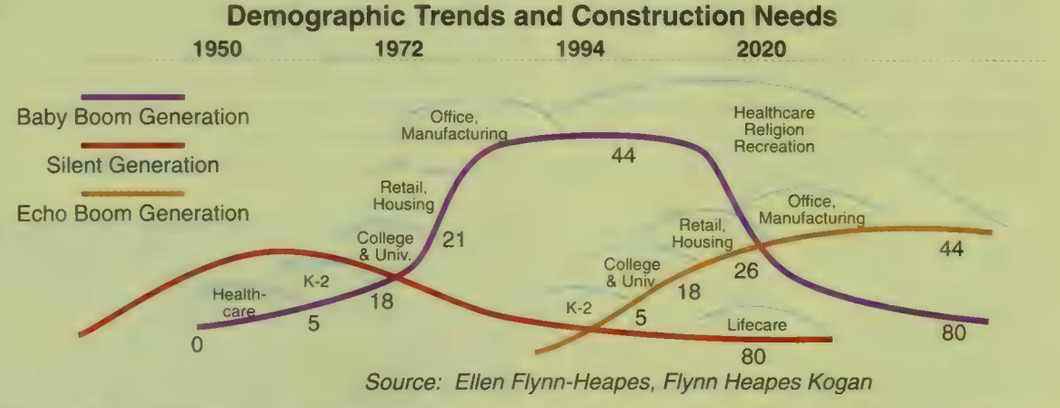
lding's not over for hospitals–yet

ugh experts have predicted less hospital struction as care shifts to clinic settings, res show that the trend in the relation- of hospital construction spending to r health-care-facilities spending (which ides nursing homes and clinics) has not ged yet. (Square footage tracks closely cost figures, so it isn't exploding costs sq. ft that's responsible.) Still, it was in ital spending that last year's steep ine was recorded, which–with health rm in the air–may prove a harbinger. ■



ich generation needs what facilities?

nomists have long predicted building ls based on demographic trends. Ellen n-Heapes, a management consultant at hington, D.C.-based Flynn Heapes an, created the intriguing diagram that ally documents these trends (it first eared in the *SMPS Marketer* in February). In the next few years, for example, boomers' parents will move into retire- t, while the boomers become more erned with health care. Their kids need ols. (Numbers on the graph are ages.) ■



Profession Month

• Should Architects Design Cities: As part of RECORD's continuing Agenda series, Suzanne Stephens examines architects' renewed focus on community design–and this movement's new critics. Also, Charles Lockwood writes on the "undesigned" periphery. Finally, is Rome a model for nurturing older communities? *Page 28*

• Time To Look Again at Desktop Control: Several trends make a powerful case for individually controlled, workstation-based ventilation and lighting. *Page 34*

• The Revolution in Color Output: Declining prices and increasing quality of computer printers and plotters means architects have more choices to make. Steven S. Ross sorts out the innovations. *Page 36*

• Glass and Plastic Glazing: Our New Product reports include sun-control glazing from Germany, and plastic glazings that meet new impact- and wind-load codes. *Page 40*

Should Architects Design Cities?

By Suzanne Stephens

The irony of it all. At a moment when so many architects see themselves as marginalized in their traditional role as designers of buildings, others are attaining widespread influence in the remaking of older communities and the planning of new ones. To be sure, firms such as Venturi, Scott Brown and Associates have long been involved in urban design and planning. What's surprising is the number of architects who are risking the wrath of politicians, policymakers, and certified planners in proposing alternatives to suburban sprawl and to America's slavish dependence on cars.

By now the principles of the traditional neighborhood developments (TNDs) pioneered by Andres Duany and Elizabeth Plater-Zyberk (DPZ), of Miami, or the transit-oriented developments (TODs) conceived by Peter Calthorpe, of San Francisco, are well known. They have galvanized public officials and private developers into revising zoning and rethinking long-held tenets.

These practitioners of self-styled New Urbanism differ on many details, but are united on essential principles. Douglas Kelbaugh, at the University of Washington in Seattle, Harrison Fraker, at the University of Minnesota in Minneapolis, Stefanos Polyzoides and Elizabeth Moule, of Los Angeles, and Daniel Solomon, of San Francisco, now count themselves among the converted. Indeed, the Congress for the New Urbanism meets in Los Angeles at the end of May.

Architects have always felt that their efforts should not be restricted to single buildings on individual sites, but should extend to the streets and communities of which they are a part. Still, the intense criticism of the alienating neo-Corbusian landscapes of the post-war era stung. Architects still must overcome suspicion that they are purveying abstract, simplistic solutions rooted in a singular artistic vision rather than listening to and acting on what communities actually want and need.

Does suburbia need a focus?

Though the New Urbanism is in no way Corbusian, the principles and the first realized efforts of these architects have come increasingly under fire, mostly from planners and academics. Roberta Feldman, a professor in the School of Architecture, and Martin Jaffe, a professor in the School of Urban Planning and Policy, both at the University of Illinois at Chicago, claim that New Urbanist thought is based on false premises. They see America's diffuse, car-oriented spatial structures as suited to post-industrial patterns of working and living. Americans are no longer "place bound," Feldman and Jaffe write (*Inland Architect*, September-October 1992), and t idea of creating a "public realm by replicat an historic, centered settlement simply ha no functional basis." Dennis McClendon, o managing editor, now design director of *Planning* magazine, argues that the publi may be more attached to the freedom that the car allows than most architects suppos Even Steven Izenour, a partner with Vent Scott Brown and Associates (and a cycling enthusiast), finds downplaying the car "a little romantic."

Increasing density, a goal especially of TO also comes under fire. Though intended to reduce the environmental impact of develo ment, "the desirability and feasibility of compact urban forms," write Ivonne Audi Anne H. Shermyen, and Mac T. Smith, "re on a frail foundation of knowledge regardi the net costs and benefits of urban sprawl" (*APA Journal*, Autumn 1990). The critics suburbia, they write, "ignore the fact that preference for low-density living has been well-documented in the planning and socio logical literature."

The realities of development may also imp these communities' vision of mixed-use. Th concept of integrating commercial uses ha been slow to reach fruition in the new TN In spite of DPZ's strenuous efforts to mak an extension of the pedestrian-scale street shopping plaza built at the firm's Kentlan

Suzanne Stephens is the editor of Oculus, *published by the New York Chapter/AIA, and a regular contributor to the* New York Times.

Harbor Town, an example of proliferating TND's, has been planned by RKTI, as an extension of Memphis's downtown. Houses (1) were designed by Looney, Ricks, Kiss Architects of Henry Turner Company. Housing (2) built with author in the apartments rising of Peter Calthorpe's Laguna West (3), and the commercial center remains undefined (4). Fred Koetter and Susan Kim proposed the right development for Berkeley, Shattuck Down (4).



1



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s part of RECORD's series on expanded roles for architects, uzanne Stephens examines the renewed focus on community esign–and this movement's new critics. Earlier series installments: ublic housing (January); industrial heritage (February).

Gaithersburg, Md. is a conventional strip ehind a sea of asphalt. While single-family ousing proceeds apace at Laguna West, the ND planned by Peter Calthorpe near acramento, Calif. [RECORD, January 1994, age 90], the commercial center will not be uilt until a critical mass of shoppers exists , opposite). Robert Bruegmann, a Chicago-ased architectural historian, wonders if mericans will give up discounts and the ide choice of goods available in regional alls for pedestrian-scale towns that don't commodate "the footprint of a Wal-Mart."

ne gridded streets are presented by New rbanists as less space wasting and more nducive to mixing uses than suburbia's pical pod-like subdivisions. They have their tractors: "A disadvantage of the grid," cClendon argues, "is the use of the streets outsiders. Anyone who doesn't live there n drive down the streets, which is often athema to suburbanites used to cul-de-sac reets, collector, and arterial roads."

mping on the TND bandwagon

ne architects of TNDs tout the turn-of-the-ntury, small-town-America porches, rmers, and picket fences of their communi-s as both climatically sensitive and desired buyers. The critics have called these fea-res anachronistic and sentimental. ldman and Jaffe wonder if rehashed ver-cular "will generate blandness and uniformity [as in the much-maligned ranch burger] merely through pervasive duplication." Already numerous communities are being built in the style of DPZ's famous prototype, Seaside, Fla., ignoring the attention to materials, proportions, and detailing in the original. In some cases the planning concepts that endeared TNDs and TODs to policy makers concerned about congestion (reducing auto trips with neighborhood retail and a focus on transit nodes) or to environmental activists (who prefer preservation of open space through higher density and more concentrated development) are being watered down as the ideas spread more widely: "Developers are quick to jump on the bandwagon," Dennis McClendon maintains. "They just put up a gazebo and claim it's a neo-traditional village."

Buyers: pro-community; anti-sprawl

The New Urbanists, however, may have read the market better than the critics. According to *Builder* Magazine, John Schleimer, a real-estate analyst in Sacramento, found that 84 percent of 311 respondents in four TNDS he surveyed would choose a similar development again. The sense of community was highest on their list of advantages. Visual preference studies developed by Anton Nelessen, an architect and planner who works in Princeton, N. J., show similar predilections. Nelessen has interviewed some 25,000 people in the workshops he has conducted over the years with both public officials and citizens. "A set of design principles is constant, in spite of regional differences," he notes. Participants preferred town centers with some kind of public space. "They hate commercial strips, arterial roads, and are anti-sprawl," Nelessen emphasizes. "Never once", he says, "did the preference workshops call for a cul-de-sac."

The car remains a problem–for everyone. According to analyst Lloyd Bookout, who wrote a series of articles in *Urban Land* magazine in 1992, explosive traffic growth isn't going away. A U. S. Department of Transportation study he cites, shows that the "vehicle miles traveled increased nationwide by a staggering 41 percent between 1983 and 1990." The six percent increase in population would only account for 14.8 percent of the total traffic growth. Nevertheless Bookout notes that TNDs use 13 percent more land for streets than do standard Planned Unit Developments.

Devaluing the physical city

Because more of the neo-traditional communities exist in colored drawings and plans than in actuality, it will be some time before the success or failure of these towns can be fully gauged. Nevertheless it is clear that these schemes do bring back an important visual emphasis to planning. "Architects can deal with abstract concepts and communicate





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them visually to the public," says George Crandall, an architect from Portland, Ore., who has been instrumental in organizing a regional planning process for the area. "Planners don't have these strengths." Indeed, Andres Duany has long argued that if architects don't bring design skills to the table–and bring them in a way acceptable to developers and buyers–no one else will. Today's cities are "planned" by non-designers, he explains: civil and highway engineers, and speculators.

And what of planners? William Morrish maintains that for the last 20 years they have devalued physical factors. "Planners have limited their language to quantitative analysis," he says. "These people are in charge of cities, yet they have no sense of history." Morrish is an architect who, with landscape architect Catherine Brown, was recruited by Harrison Fraker to run the University of Minnesota's Design Center for American Urban Landscape in Minneapolis. The shift away from qualitative thinking among planning professionals, he and others say, occurred in the 1960s and 1970s, and even earlier, when most of the graduate schools began to stress public policy, sociology, demographics, and economics over design. This left a void, according to Morrish, which architects began to fill by defining the new field of urban design. Though the Boston firm of Koetter Kim finds itself increasingly competing with urban designers, Susie Kim feels their firm's strengths as architects have been key to getting work. "There are firms that call themselves urban designers or planners that don't know the implications of block sizes on building layout or flexibility," she says. "Planners come with the ingredients, but rarely a vision of how the parts go together. There has to be an understanding of economic viability and how an idea fits with societal aspirations, but you really have to shape and mold these things; give them weight." Indeed, says Kim, this is the only way affected citizens can evaluate plans. "You have to suggest things, and let people pick at them. People need something to react to."

What architects are good at

Architects have succeeded in newly embattled suburbs, Douglas Kelbaugh suggests, because they "have more of a missionary zeal about saving the city, making suburbs livable, and reversing devastating trends." Planner Denise Scott Brown, whose book *Urban Concepts* was recently published by Academy Editions, maintains that architects' visual orientation is not their only advantage. "Architects are trained as doers," she says. "They can use information to make decisions. Their training teaches them to take knowledge from other disciplines, such as architectural history and engineering, and apply it to architecture. Planners and city policy makers get less training in putting knowledge to action."

While the New Urbanists stress the marketability and the public's participation and acceptance of their designs, other architects are bringing a much more esthetic slant. Diana Agrest and Mario Gandelsonas have taken inspiration from the clash of two city gridirons in Des Moines, Ia. Arquitectonica's Meerhoven project, a new city center near Eindhoven and the residential town of Velkhoven in Holland, uses forms familiar from the firm's architectural work (below and opposite). Still, the redesign of this former NATO base, like the American TNDs and TODs, will have a town center with a clear hierarchy of streets oriented to inhabitants accustomed to traveling extensively by bike and foot. It is designed as a mixed-use center with 5,000 units of housing as well as a lake and an industrial park. "The strongest component of the area is its park-like aspect," says Arquitectonica partner Laurinda Spear. In the Nanwaitan District of Shanghai, China, where Arquitectonica is designing a mixed-use district on the waterfront, pedestrians and bicyclists, as in Holland, need no introduction. Instead, the architects are carefully considering the impact of mass bicycle traffic: the firm is providing a huge allée for pedestrians. The development will also be tied to an extension of the metropolitan transit system.

Architects have been criticized by planners for believing their visually generated



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eded." Scott Brown also observes, "Archi-
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at appears dysfunctional from their point
view may function for someone else."
me are not well informed, she continues,
d "their social ignorance may guide them
irrelevant solutions."

larger vision of urbanism

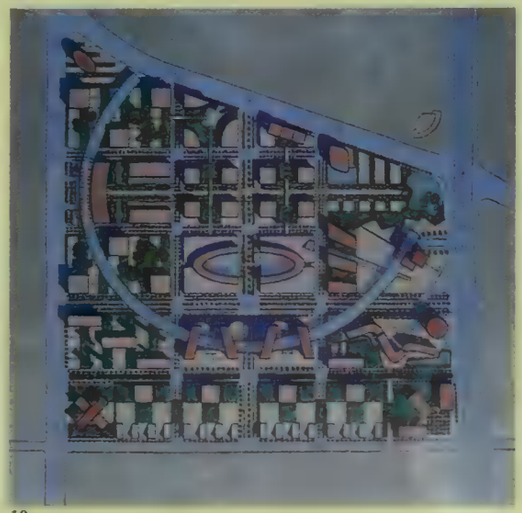
vertheless, a growing number of archi-
ts who have turned to planning are going
yond the conventional definition of design-
Indeed the architects who have been
racted to the TNDs and TODs of the New
banism aspire to a regional vision that
nsiders area-wide transportation impacts
new development, seeks to preserve
ued natural environments, and recognizes
t central cities and their low-density
burbs are single economic entities that
ve a shared destiny. "Morrish and Brown
trying to bring ecology and geology, and
morphology of the place into considera-
n as we build new communities," says
rrison Fraker, dean of the College of
chitecture and Landscape Architecture at
University of Minnesota. These disci-
plines are being applied by a joint study aimed at reviving Phelan Village, northeast of St. Paul.

In a major study for Portland, Ore., Peter Calthorpe is analyzing ways to repair and regenerate existing suburbs within a regional framework. In his study he is showing how various alternatives to growth could affect eight different sites. In Florida, John Moore is addressing similar regional concerns through the Florida Center for Community Design + Research at the University of South Florida in Tampa. (Finding less damaging methods of development is essential in the region, as the state and federal government undertake a massive effort to save the declining Everglades–a victim to a large extent of insensitive development.) Both Moore, the center's director, and Calthorpe have focused on the underdeveloped, older existing subdivisions that can't be bulldozed or infilled. They are not cohesive enough to be neighborhoods and too hard for developers to assemble.

Only when such high ambitions have been tested by built work will it be possible to evaluate this revived role for the architects. For years many have waited on the sidelines for others to fix the way America builds cities. Now a new generation has decided it can take the heat, and has moved right into the kitchen. ■



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Cracks in the Veneer of the Undesigned City

Products of marketing rather than design, suburban downtowns are touted as the business location of choice. Their future looks clouded.

By Charles Lockwood

Over a generation, dozens of suburban downtowns or "edge cities" emerged at the periphery of the nation's metropolitan areas. These high-density employment, retail, and entertainment centers have been touted as a new form of urban development, intended to replace traditional downtowns and highway-strip development. More importantly, they have been shaped by marketing consultants, not architects, and built piecemeal by real-estate developers, rather than master-planned. The primary role of design has been as packaging intended to differentiate essentially similar stand-alone building "product." Is this a good way to build a city? A closer look reveals cracks in the reflective-glass veneer.

Most suburban downtowns—including Tysons Corner, Va.; Bellevue, Wash., Las Colinas, Tex.; and Costa Mesa, Calif.—sprouted, seemingly overnight, and soon became local giants. One example: Perimeter Center and Buckhead, near Atlanta, each boasts more Class A office space than downtown.

Big-city problems move outward

The single-minded devotion to leasable square footage often obliterates those qualities that drew people to the low-density periphery (quiet, open space, and a small-town, neighborhood orientation). Where once corporate R&D centers nestled among generous landscaping, it is now more common to see mid-rise towers sitting atop multi-story parking structures surrounded by asphalt. Homeowners in the western end of the San Fernando Valley, for example, are fighting long-term plans to add 20 million sq ft to the 15-million-sq-ft Warner Center office and retail complex (it would then rival downtown Los Angeles).

Some of the problems of central-city downtowns have come to haunt the new suburban centers, particularly traffic congestion. Cars choke freeways not just at the morning and evening rush but even at midday, since workers must drive to do even routine errands. (In most cities, beltways linking suburban centers are more congested than downtown-to-suburb corridors.)

Crime, particularly gang activity, is a problem in malls as widely scattered as Southfield, Mich.; Houston; and Southern California. One mall on Long Island, N. Y., became a favorite location for auto-theft insurance scams.

Does business need edge city?

Surprisingly, even as they have become a dominant business location, the future of suburban downtowns is not assured. As buildings age, tenants are moving to newer, evermore distant, but less-congested locations. (J. C. Penney chose the Dallas area when it left midtown Manhattan, but built in Plano, some 35 miles from downtown. When Sears moved staff from its tower in Chicago's Loop, it didn't choose established suburban business centers, but exurban Schaumburg.) Many of these so-called "edge cities," though, were built in the 1980s speculative boom, and vacancy rates have typically exceeded more-costly downtowns by several points.

Upheaval in the white-collar corporate world and in retailing is clouding the assumptions on which suburban downtowns were built. "Corporations won't necessarily want space in today's suburbs," warns Peter Miscovich, vice president of Interior Space International. Instead of prestige towers or low-rise campuses with huge floor plates for single users, Miscovich sees some tenants "moving to the outermost fringe of metropolitan areas. Others are relocating to small towns that are geographically remote, but technologically convenient to the rest of the country." Regional malls, too, are losing their allure as shoppers abandon anchoring department stores for highway-strip discounters, "power centers," mail order, and television shopping.

Winners and losers

Some suburban downtowns will evolve successfully, particularly those located in their metropolitan area's favored sector. Decline, though, is already visible in the Sherman Oaks/Van Nuys complex at the intersection of the Ventura and San Diego freeways, in Los Angeles' San Fernando Valley. White Plains, N. Y.; Stamford, Conn.; and Southfield, Mich.; may be tottering on the brink. Even a study by real-estate-investment giant Prudential Insurance (as reported in *Edge City News*) found considerable variance in investment potential for many suburban downtowns, rating several areas around Detroit, Boston, Seattle, and the Bay Area "pricey," and some places near Dallas, Houston, and Miami as "opportunistic"—meaning good values.



© Timothy Hursley



Bellevue, Wash., is an auto-oriented post-downtown that has not left its future to chance [RECORD, July 1988, page 108-1]. It's encouraging housing (top) within walking distance of shopping, offices, and a new regional library (above–Zimmer Gu Frasca, architect). Still, a long-planned pedestrian spine is more idea than realit

Of course, suburban downtowns are a relatively new phenomenon. With time, these centers might evolve into more pleasing and functional entities, just as the raw industrial towns of the late 19th century were transformed into more attractive and comfortable places by stricter regulation on business and esthetic movements such as the Parks and City Beautiful. Though they may not have been in on the inception, retooling suburbia may offer important new opportunities for architects. ■

Charles Lockwood, author of seven books, co-wrote "Suddenly Suburbia" in the October 1986 Atlantic Monthly. He was among the first to identify the suburban downtown trend.

Nurturing a Long-Term Vision For the City

Astra Zarina argues that Rome offers unique inspiration to those seeking a way to remake America's urban chaos.

There are those who argue that urban America's explosion outward—its restless search for greener pastures—is both vital and suited to modern life (previous stories). As urban areas expand, though, older communities come to be seen as "obsolete,"—places never left behind. Indeed the nation has left behind whole downtowns (Detroit), industrial complexes (Pittsburgh), vast train stations (Kansas City, Buffalo), and countless once-thriving neighborhoods, which—at best—are seen as urban panhandlers, always after a federal handout

It sometimes seems that only architects ask whether such patterns are morally or historically defensible. Can the nation one day be persuaded to *nurture* cities? Where can we find a vision powerful enough to change what seems culturally ingrained? In Rome, Astra Zarina argues. A professor at Seattle's University of Washington, she has, in her role as director of the College of Architecture's programs in Italy, focused her students on the powerful lessons the Eternal City itself—not just its monuments—can teach. Even among great European cities, Rome is unique, she says. "You have milieus and environments that have undergone enormous transformation. Yet, each was built on what went before." For her, the lesson of Rome is "the enormous amount of adaptation, reshaping, and remolding on all levels."

Uncovering the city's essence

For 25 years she has prodded students to walk, draw, and measure the streets, blocks and neighborhoods (*rioni*) of Rome's historic center, in the process peeling away layer after layer of the city's history. Zarina asks students to analyze the physical: proportions of buildings and streets; the influence of a piazza's shape (whether Baroque setpiece or historical accident) on its activity and flow. Students look at connections and hierarchy in what's above the street as well as on it.

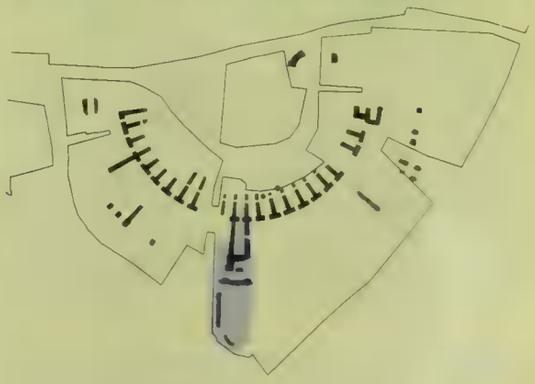
Over the entire city comes under scrutiny, Zarina and her students (including, once, the author) have increasingly focused on the Pio block, a seemingly non-descript Medieval pocket amidst the city's glittering architectural treasures. (Other groups have worked in Civita di Bagnoregio, a tiny hilltown.) Students have pulled together an incredibly rich history out of the apparent disorder. Within the block's current envelope (outline in drawing bottom), you can still read the plan of the Teatro di Pompeo, a vast open-air hemicycle that occupied the site 2,000 years ago. The line of the stadium seats is visible in the curve of rooftops (top photo) and streets whose walls are made from houses built over the ancient foundations. Students have documented the incorporation of primitive residential *insulae* (the Roman tenement) into elegant Renaissance parlors and their subsequent division into upscale apartments. Ancient vaults and piers (black poché in drawing) are still visible in ground-floor restaurants and car-repair shops. The program became so successful that the University of Washington established permanent quarters (designed by Zarina and her husband, architect Tony Costa Heywood) in part of a 17th-century palace within the Pio block (shaded area of plan). Even the renovations became a learning experience, uncovering remains of a Medieval tower often shown in historical documents, but thought destroyed (middle photo).



© James S. Russell



© Janos Grapow



Models of adaptability

Rome also has building-scale lessons to offer, according to Zarina. "I try to bring students back to spatial essentials. The insula, for example, is a type that reappears all the way into the 19th century. It's just a superblock penetrated by portals and loosened up by courtyards. But it allows a diversity of functions." She steers students away from what she calls "hand in glove" architecture suited only to a single purpose. An Italian palazzo, she says, "is a kind of ennobled loft, containing certain sizes of spaces that you can adapt to any number of uses."

Zarina's approach keys into what seems a primal urge among architects to shape the city—even when not invited to. Rome nurtures the vision that cities should be built for the long term—a stand few city builders will take these days. "You get a completely different frame of reference," explains Steven Holl, an early Rome program participant and among its most illustrious alumni. "You think about buildings with a different conception of time. The intensity of the layers of history—and how they can be read—is humbling."

James S. Russell

Time to Look Again at Desktop Control

Trends in energy conservation, workplace patterns and use of microcomputers make a powerful case for individually controlled, workstation-based ventilating and lighting.

By Philip C. Weiner

There is an experimental office in Tokyo where conditioned air is imperceptibly introduced through tiny perforations in the carpet. In Germany, an office worker casually adjusts the air velocity and temperature coming from a network of ducts built into her desk. In Indiana, an employee adjusts a desktop control panel to dim the ambient light, increase the white noise level, and warm his feet, while his neighbor in the next cubicle does the opposite. These are all examples of a trend toward greater individual control of heat, ventilation, and light in the office. Increasingly, researchers and clients are concluding that today's universal lighting and ventilating solutions are no longer adequate.

While many managers and owners acknowledge that individual control is innately appealing, such systems have not been widely used in America, primarily because of fear that high first costs (and, potentially, high operating costs) won't deliver tangible returns in productivity or satisfaction. Several trends, however, make a powerful case for a new look at these techniques.

Currently there are two alternatives to conventional ceiling delivery and return:

- *Underfloor systems* supply conditioned air to the workstation through adjustable outlets in a raised floor. (The plenum itself may be pressurized or local fans may draw air from the plenum or ductwork to drive the outlets.) Underfloor systems' advantages are that the air is delivered directly to the occupant (ceiling delivery/return schemes often short-circuit) and that air speed and direction can be adjusted.
- *"Task" conditioning*, a more sophisticated approach, delivers conditioned air ducted up from a raised floor or exterior wall to the breathing zone through a diffuser in the office partition or desk or through a special desktop device. In both underfloor and task systems, air is exhausted through conventional ceiling returns.

There is a variety of currently marketed devices. CenterCore offers an air-filtration and fan device that can be integrated into a workstation cluster. It's reasonably priced at about $250 per worker, but it supplements conventional air delivery rather than replacing it. Tate, a major supplier of raised access floors, offers the Task Air Module in which fans draw conditioned air from an underfloor zero-pressure plenum, supplying the workstation through user-adjustable grilles. Incorporated into a standard 24-inch floor panel, it can be conveniently placed and relocated. It's easy to add additional outlets to handle extra equipment loads. If the client can justify the cost of an access floor to ease recabling, the additional cost of about $300 per unit may seem reasonable. The Personal Environment Module (PEM) from Johnson Controls remains the most ambitious choice, providing fingertip control of filtered air flow (through a convenient desktop diffuser), temperature, and task lighting. It offers sound masking and a built-in radiant panel for supplemental heat. An infrared sensor shuts the unit down when the occupant leaves, and restarts it when the occupant returns, remembering previous settings. This sophistication comes at a price—about $2,000 per station. The desk-hung fan unit is bulky and must be connected to the building hvac, typically through a raised floor (below). These American companies have entered a field long dominated by European firms such as Krantz (Germany) and Climatedesk (Sweden). Most major manufacturers of systems furniture have task-conditioning products in development.

Philip C. Weiner is a New York-based architect who specializes in corporate interiors.

Heed the unhappy office worker

While several trends are driving increased scrutiny of user-controlled systems, the most important factor is that users are experiencing more discomfort in the conditioned environment. Even among well-designed variable-air-volume ceiling-delivery systems that meet industry-accepted criteria for comfort, survey after survey documents widespread dissatisfaction with office air quality, (ranging from 27 percent to 35 percent, according to research by Alan Hedge, Abigail T. Michael and Sharon L. Parmelee of Cornell University's Department of Design and Environmental Analysis; another study found dissatisfaction as high as 70 percent). Some buildings with indoor air-quality problems suffer from poor air distribution, even though designed to meet accepted criteria. Thermal comfort is vexing because individuals report widely varying comfort levels even within the accepted temperature comfort zone. Men tend to feel too warm at temperatures that please women. Older workers tend to feel cold at higher temperatures than younger people.

Productivity and air quality

David Wyon of the Swedish Building Research Institute has studied building design and efficiency for more than 25 years. At the American Society of Heating, Refrigerating, and Air-Conditioning Engineers' (ASHRAE) Healthy Buildings—IAQ '91 conference, Wyons reported, "temperature does affect productivity directly, and it does affect Sick-Building Syndrome." In office settings, Wyons claimed, "quite small deviations from the individual optimum temperature can have powerful negative effects on efficiency." Researchers L. G. Berglund and W. S. Cain found that people perceive air quality less acceptable as temperature climbs to 77F or higher—an ever more frequent occurrence in today's offices. Wyons found the productivity of persons experiencing Sick-Building Syndrome can be expected to decline from 20 to 50 percent. (Conclusions of both studies are described in more detail in the December 1991 *Indoor Air Quality Bulletin*.)

Other trends favoring "task" control

- *Computers, monitors, fax machines, and printers* are adding heat to the workspace ways conventional systems don't always handle well. It's not just the higher heat loa (think of each device as equivalent to an incandescent light bulb), but the desktop location of the devices that exacerbates pro

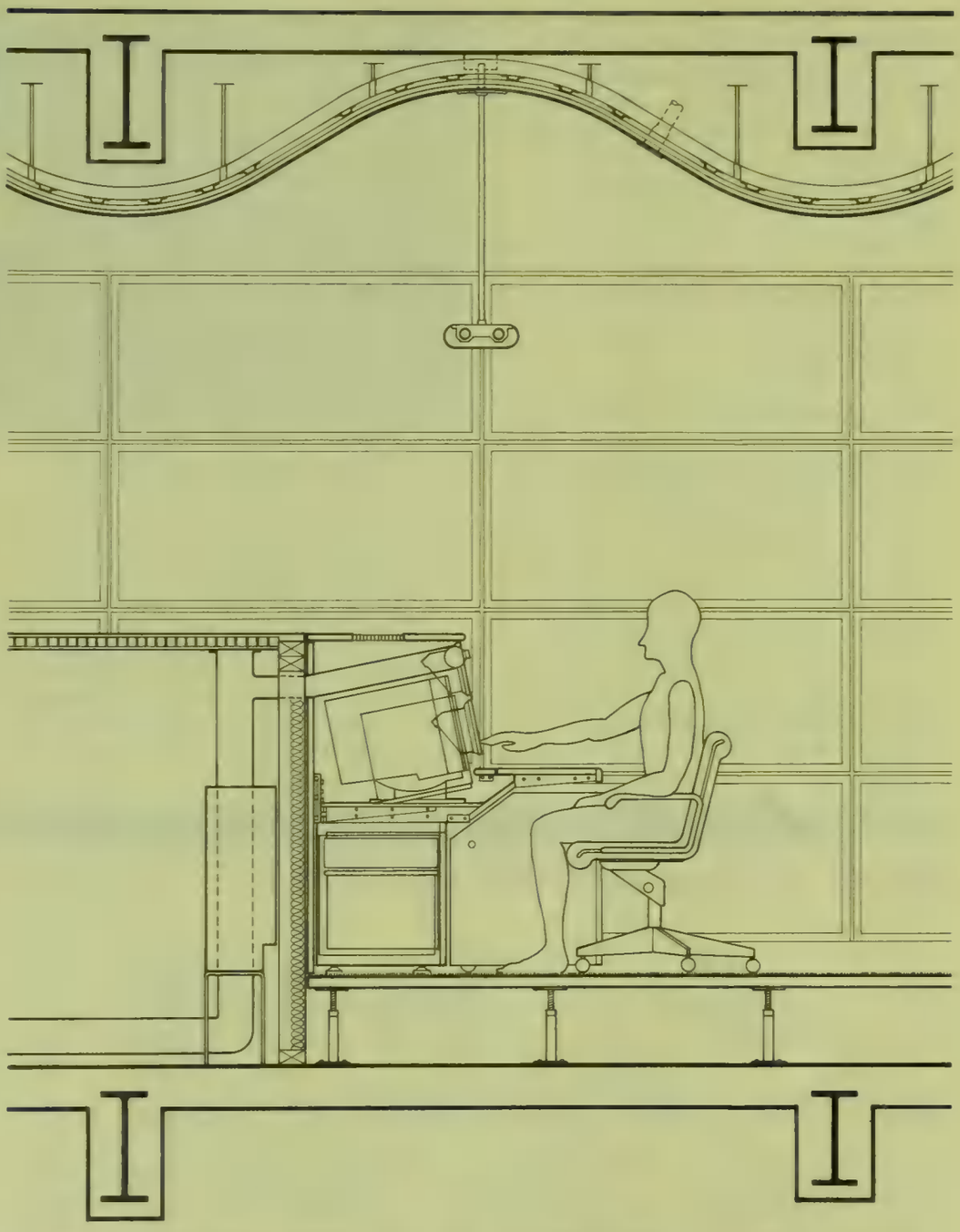


Johnson Controls' Personal Environment Module is the state of the art in task contro but is bulky and needs base-building hvac.

Skidmore Owings & Merrill provided a task-based system in the trading room of Credit Lyonnais in New York when low ceilings and a raised floor precluded overhead duct-work. "We wanted the ceiling as high as possible for an indirect, low-glare lighting system," explains associate partner Steve Apking. Fan coil units behind desks cool room air, expelling it both upward and outward through an adjustable nozzle.

Wolfgang Hoyt





ns already documented by research. Stag-
nt air is particularly a problem in the kinds
densely laid out, shoulder-high office-
stem cubicles that are widely used today,
cording to the Cornell research.

Changing patterns of work: Typically, says
ofessor Edward Arens of the Building
ience Laboratory at the University of Cali-
nia, Berkeley, "you find less than half the
ople are at their workstations at any one
ne." The trend may be accelerating as more
ff work part time at home, on flex-time
ifts, at clients' workplaces, or in task-ori-
ted groups that are tied to projects rather
an places. Combined with occupancy
sors that automatically shut down the air-
nditioning and lighting of unoccupied
aces, individual controls may offer dramat-
energy savings, even permitting
wnsizing expensive equipment. A study by
hn E. Seem a senior research engineer at
hnson Controls, and James E. Braun of
rdue University, showed that there can be
energy penalty with individual controls of
much as 15 percent. But they found
pressive savings in offices where 50
rcent of workstations are occupied at a
en time.

individual controls deliver?

searchers have been actively tracking the
all installed base of user-controlled
stems in America, and their documentation
ggests impressive improvements in
nfort and productivity. Wyons reported a
percent reduction in symptoms of Sick-
ilding Syndrome in offices where users
ld individually control the temperature.
her surveys show high satisfaction, and
ny users consider themselves more pro-
ductive with individual control. An indepen-
dent study by Rensselaer Polytechnic
Institute's Center for Architectural Research
looked at the West Bend Mutual Insurance
Company headquarters, where 370 Johnson
Controls PEM units were installed. It found a
2.8 percent improvement in productivity
attributable directly to the devices. (Almost
no single strategy has been shown to improve
productivity so dramatically.) Given an
annual salary base of $13 million, West Bend
management reports that it saves at least
$260,000 per year. With these savings and
those from energy conservation and lower
base-building hvac costs, West Bend's
payback was less than one year. Arens says
some Japanese clients have found desk-
based systems to be lower in first cost and
operating cost.

Professor Walter M. Kroner of RPI, who led
Continued on page 45

Revolution in Color Output

There has been a revolution brewing in output devices. Pen plotters have gotten easier to maintain; software improvements have reduced the complexity of setting up and using more than one printer. New printers, based mainly on inkjet technology, are small enough and simple enough to use routinely for check plots and even for final, client-ready drawings. New printing systems have appeared with color technology that realizes in hard copy what the 3D and rendered images modern CAD software promises on-screen.



1

It's easier to understand the current array of output options by recognizing that the kinds of printers most offices can afford fall into one of the four categories discussed below (in order of descending sophistication and, usually, cost.) Which output technology is best for you? The answer depends on the size of your office, the nature of your practice, client expectations, and—something rarely mentioned—your drawing style.

Thermal-transfer color printers

Using belts of wax-like ink, most systems move the page under belts that apply appropriate amounts of colors in turn. The ink belts are heated from behind by rows of tiny styluses that transfer ink to the page. These printers produce by far the brightest and widest range of colors. The different inks blend together to build up near-photo-quality hues. Solid areas are handled consistently with no evident banding (created by the line-by-line passes of the print head on other output devices). The resolution is 300 to 600 dpi, but, like the continuous-tone printers, the dot build-up can make images look sharper.

The printer uses the edges of the page to grab the print, moving it and the ink belts under the fixed styluses. The print area thus is not quite the full page width. The printer will make crisp images on acetate for use on overhead projectors, but an inkjet may do about as well at much lower cost per image.

Perspective

What Device Is Right For You?

Output devices in the over-$10,000 range are usually too pricey for all but the largest offices. That's where you'll find high-volume machines using electrostatic and xerographic technology. Nevertheless, rapidly changing technology and declining prices mean that large offices or those with specialized needs can consider replacing many of the tasks heretofore performed by service bureaus with these high-end devices.

Large-format (D- and E-size) color inkjets are well under $10,000, which makes them practical in many settings.

- CalComp's DrawingMaster, a direct-image printer (the colors are embedded in special paper) starts at about $15,900. *Circle* **300**
- Monochrome electrostatics are getting cheaper: JDL's Express-Plotter II costs for under $12,000. *Circle* **301**
- Océ-Bruning models are faster, and start at slightly higher prices. *Circle* **302**

Service bureaus have fought back by installing fancy equipment inside large client offices, and by connecting smaller clients with fast modems. The fastest are now 28.8 kilobits-per-second—fast enough to transfer a larger-than-average 10MB plot file in about 45 minutes (or as little as 15 minutes with data compression).

Continuous-tone printers

These vaporize ("sublime") dyes on ribbons when heated (which is why it's called dye-sublimation technology), producing softly blended edges between colors as they are absorbed into special paper. Up to 16.8 million colors are possible. Though the current technology offers typical resolution of about 300 dpi (the same as most office-computer laser printers), the color density may appear deeper and the range of colors higher because the printer lays down many dots of different colors on the same spot rather than one dot of one color. These high-volume printers are usually priced over $15,000. Shinko makes the print engine used by many suppliers, which include:

- Mitsubishi International: *Circle* **303**
- Seiko (they make Epson): *Circle* **304**
- Kodak: *Circle* **305**

S. S. R.

Rapidly improving technology and dropping prices means that printing options have multiplied, even for smaller firms. And high-quality color is increasingly affordable.





• Summagraphics offers a model that uses a narrow print head, to keep costs lower. *Circle* **306**
• Star Micronics recently introduced an A-size unit for only $600. *Circle* **307**
• Fargo's (1) costs slightly more. *Circle* **308**
• LaserMaster's top-of-the-line, 36-inch-wide unit goes for close to $30,000. *Circle* **309**

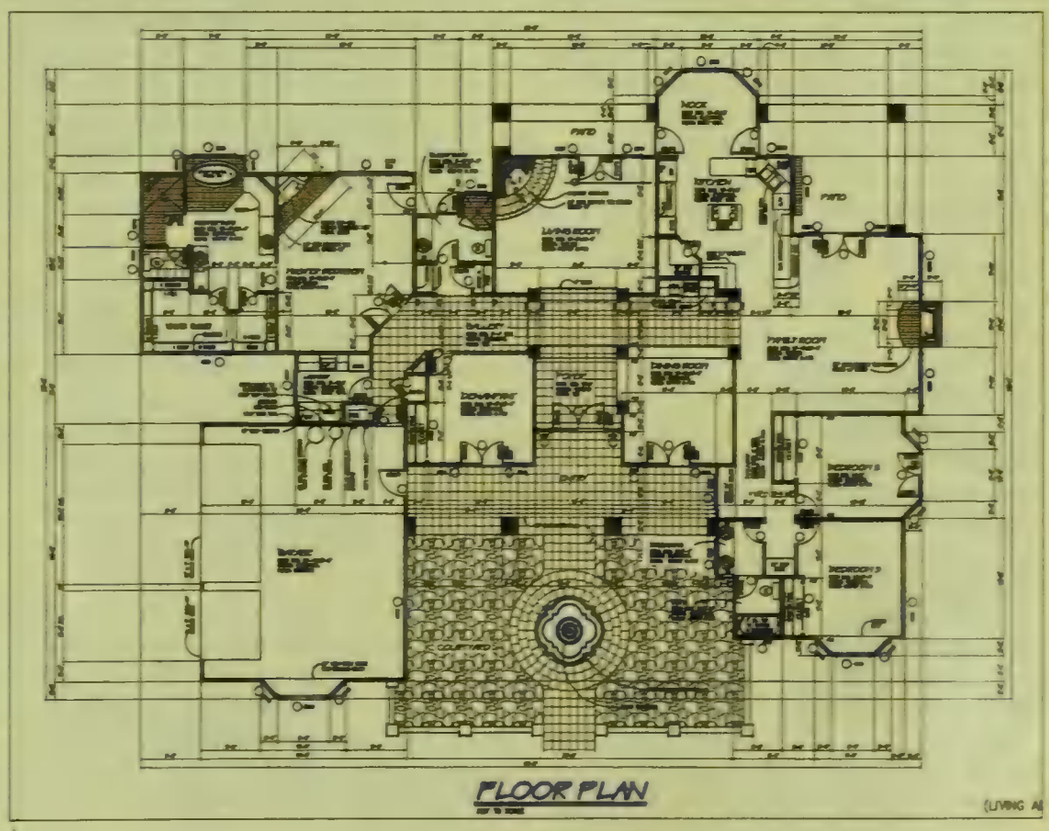
Color inkjet printers

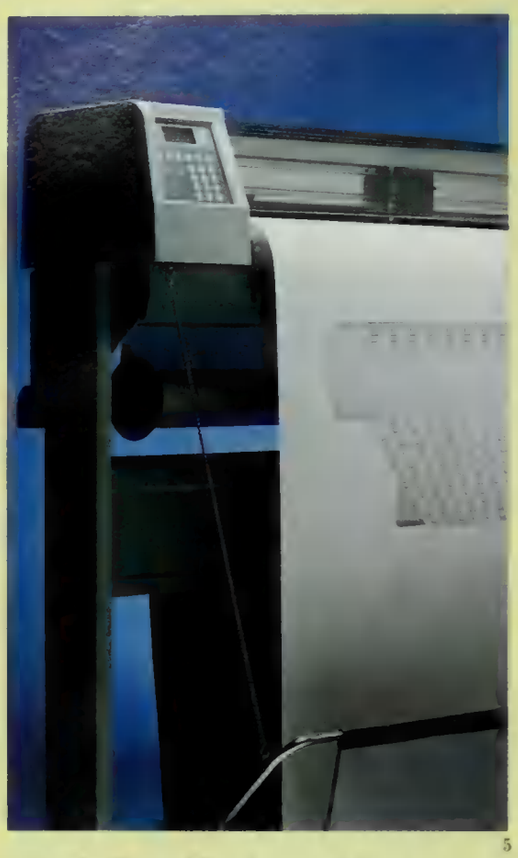
These vaporize either liquid or solid inks into droplets that are applied to the page. They don't offer the color density and range of more sophisticated printers, but resolution (300 to 360 dpi) is far higher than typical dot-matrix, the color is better, and output is much faster.

In general, inkjets that use solid-ink sticks (the stick's surface is melted just before the ink is sprayed) provide a more contrasty, crisp image on plain paper than do all-liquid inkjets. These printers are sometimes advertised as "phase change" inkjets. There are always exceptions. The many inkjets based on Canon print engines get up to 360 dpi from liquid ink. Also, liquid-ink inkjets tend to produce better overhead transparencies. Those that use solid ink are better for projecting line art because the ink is a bit thick and opaque to project colors well.

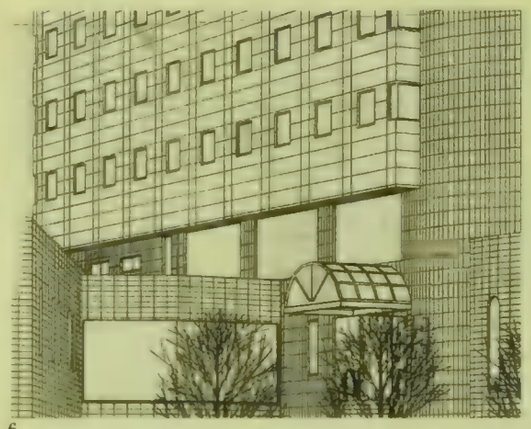
Though inkjets usually cover broad shaded areas well, experiment with printing media to obtain the best results. Coated, less-absorbent stock gives cleaner lines but muddier solid areas, especially where several colors are applied. Inkjet color images may fade over time because the inks are dyes, not pigments that clog the jet orifices. (The newer black inks *are* now pigments.) Use the inkjet images for interim presentations and not for archives or permanent displays. Monochrome inkjets can plot the same image four to six times faster than a pen plotter. Inkjets tend to be used for images that have

1. *Fargo's Primera thermal-transfer printer*
2. *Hewlett-Packard DesignJet 200 printer with stand*
3. *Note strong tones and crisp lines in Novajet inkjet output*
4. *Note banding in color and gradients on Hewlett-Packard's DesignJet 650C inkjet*

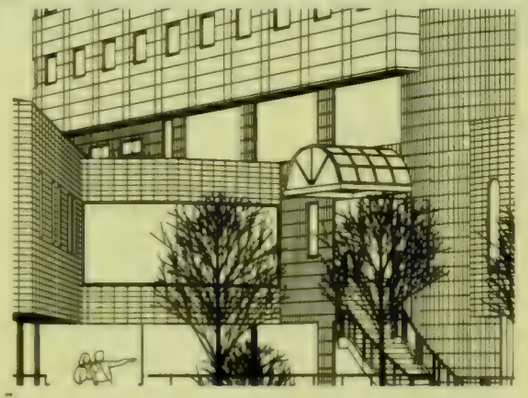




5



6



7

5. Mutoh's XP-510R.
6. Pencil plotting on Mutoh's XP-510R offers a softer rendering than pen.
7. Pen plotting on Mutoh's RT-500 is more opaque, but with slightly more clogging where lines cross.
8. Pacific Data's bubble-jet ProTracer.

more shading, adding to output time, so actual speed will depend in part on the kinds of drawings you do.

▪Encad pioneered large-format color inkjets with its NovaJet (3, page 37). *Circle* **310**

•Hewlett-Packard (2, 4, page 37) followed with a broad color-inkjet product line with prices ranging from $300 for a 550C model to $10,000 for an E-size printer. *Circle* **311**

Both vendors have added control software that eliminates banding as successive passes of the printhead build up the image.

Pen and pencil plotters

Plotters remain the least expensive way to get large-format high-resolution color images. Color choices are only limited by the number of colored pens you choose to maintain. Another plotter limitation is that you must make sure that drawings consistently specify the same pen color for pen number, and that pens are loaded correctly.

Pen plotters also have well-known limitations when it comes to toned areas or mixed colors. You can reduce these banding and color-consistency problems by using pens with wide points; even porous-point pens are available. A better solution may be updated software (in either the originating application or in the device's plot-control program) that turns shaded or solid areas into cross-hatch patterns. These plot more consistently. Sometimes, this conversion can be artfully handled by CAD software. We have just begun to examine ArchiCAD 4.5 for the Macintosh, which has this feature.

Surveys have shown that well over half of all plots in a typical office are check plots. If your drawings have a high level of detail, requiring large-format check plots, consider a pencil plotter, which are much faster than pen plotters. Mutoh's models (5, 6) can hold hundreds of leads—up to 720 on the largest model—allowing unattended operation for hours or days at a time. Ink version is (7). *Circle* **312**

If you are sticking with ink, a speedy alternative is one of the many monochrome C-size printer/plotters based on the Canon Bubble-jet engine. Besides Hewlett-Packard, other prominent suppliers are:

▪Pacific Data (8): *Circle* **313**

•JDL: *Circle* **314**

•Summagraphics: *Circle* **315**

•If you want to save money, and can live with B-size, drop to the new CalComp monochrome TechJet, for under $700. *Circle* **300**

Fast, large-format, service-bureau-style pen plotters are certainly cheap enough for many practices. Slower models seem more popular, not only because they have low purchase prices, but because they are cheap to keep.

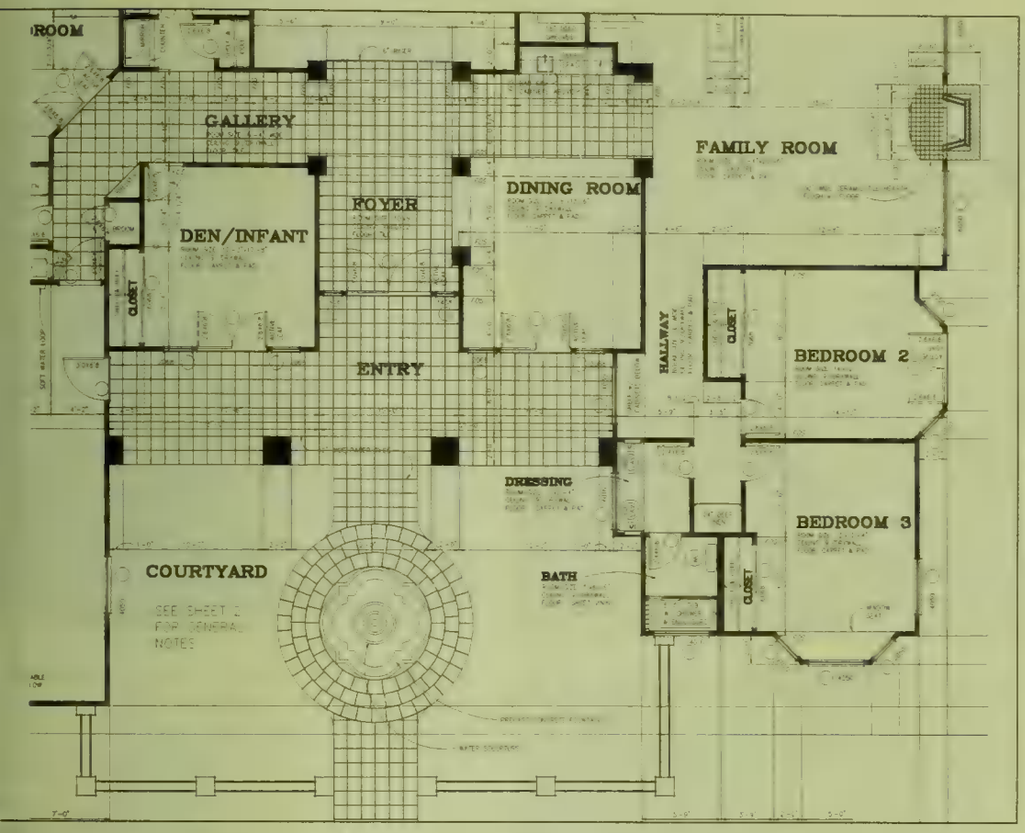
We have found that the two, one-year-old, 8-pen plotters we use for review purposes have been virtually maintenance-free–more like office laser printers than plotters. The main reason, it appears, is that they both have traded speed for dependability. The Roland SketchMate is a flat-bed plotter, meaning that the pen moves across the paper, which is fixed in position. It's a simpler mechanism that's easy on the media. The CalComp DesignMate (D-size goes for under $2,000) works like most other large-format plotters: the pen moves across the plotting media's short dimension while the plotter moves the media up and down. Fast plotters must grip media hard to move it quickly. The CalComp is slow enough so that it can gently grip media, meaning very little trouble-causing paper dust and grit is shed. *Circle* **300**

•The A-size Roland's street price is about $500, and it has a parallel as well as a serial port. *Circle* **316**

Summagraphics has been using a substitute for the grit wheel on its super-fast HiPlot 7000 series—the wheel has a laser-etched grooved surface that grips the page without tearing it as much as irregular grit points would. *Circle* **317**

Likewise, the faster the plotter, the more critical are ink-flow rates. Fast pen plotters must be watched constantly to make sure ink is flowing correctly.

Newer devices can print colors in more continuous, even tones. Some offer excellent resolution, with crisp lines and wide color range. Software can even overcome the color limitations of pen plotters.



lor dot-matrix

ns in the printer head impact on a multicol- ribbon, impressing the image on the page. ese printers are noisy and slow, and reso- ion is low, typically 80 to 120 dpi. They are eful for checkprints. Color ribbons are pensive, but the printers themselves are t, selling for as little as $200. Maximum dth is typically 11 inches.

t matrix printers perform particularly well jobs that are mainly black-and-white with s of color. Banding is a problem in images at have broad areas of pure, solid tone. The v resolution tends to produce poor results en you try to mix the ribbon's primary ors to produce different shades or grada- ns. Most units of this type are meant for e home market and sell for under $500. L sells a high-resolution 360-dpi color D- e dot-matrix, the OmniPlotter, for under 000.

other way to add a small area of color, or e color in addition to black, is to use a high- ality, office-type monochrome printer—a er printer or inkjet. You use CAD software put items of a given color on separate layers. The printing takes two passes (you change the ink or toner cartridge in between), and you "turn off" layers you don't want to print in a given pass.

Set-up and software become easier

Since printing and plotting are often the greatest source of computer frustration, it's good news that output-device software is becoming easier to use, and set-ups more flexible. These days, output devices can be found that use the serial (COM) port, the parallel (printer) port, or a network connector. Some printers and plotters come with all three built-in or available as add-on modules. Most network software now allows you to connect an output device either as a stand-alone "node" on a network, or to an assigned computer that allows printing and plotting from a different computer.

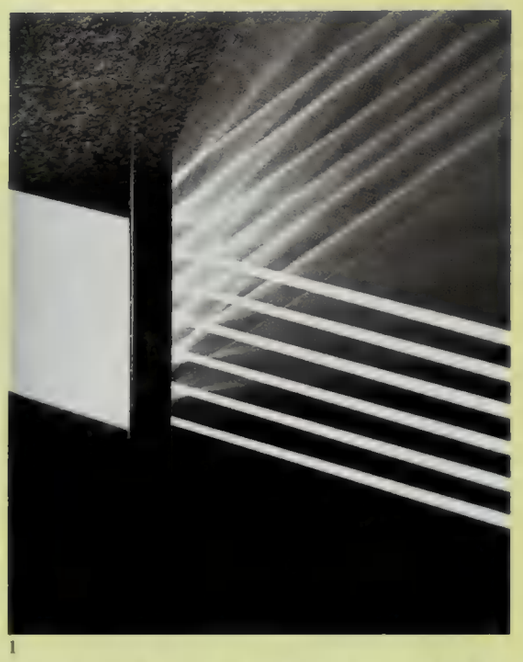
As personal-computer CAD software has moved from DOS to the Windows operating system, output-device handling has been moved from the specific application to the operating system. The advantage is that you set up the printing device once, and it works for all applications on the computer. You no longer need separate pen settings for AutoCAD and Generic CAD, for example. Still, each printer and plotter family has its unique language, which not all other models can "read." Most plotters can understand either HP-GL (Hewlett-Packard Graphics Language) or HP-GL/2, faster with more built-in primitive shapes for smoother output.

PostScript, a computer language first invented to make typeset-quality output for laser printers, is touchier. It is tempting to use because many CAD packages can output this format, and it's a widely used standard for non-CAD printed documents, such as firm brochures. The original version, which resides in many laser printers, does not support color directly; for that, you need PostScript Level 2. There have been many "clone" versions of PostScript that do not fully emulate the original. Problems have been especially noticeable in color work. Thus, before you commit to a PostScript printer, try some test images at the dealer.

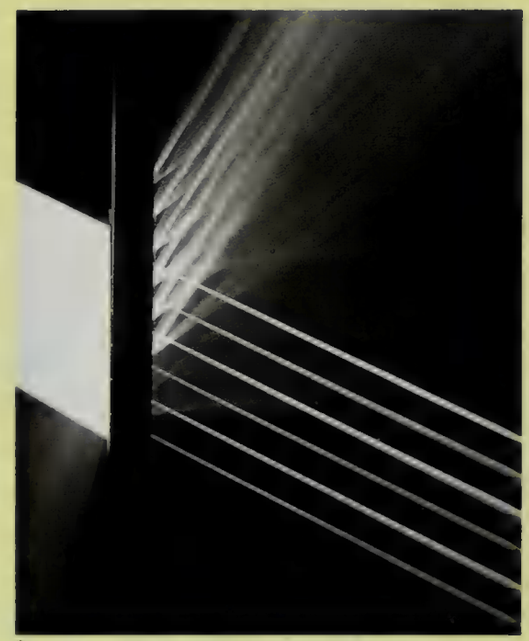
Consider also the amount of memory that comes with the printer or plotter. A plotter that can store a drawing file while the image is being output will allow the rest of your system to run faster. It won't have to "borrow" memory from the originating computer or network while it's working.

Inkjets, laser printers, and dot-matrix printers turn a *vector* image—the format used by all CAD software–into a *raster* image, which prints faster. (Raster images are also sometimes compatible with "paint" programs and image-touch up programs like Adobe Photoshop.) Consider buying or adding enough memory to store at least an entire page (1 to 2MB for A-size). Raster printers can get by with less memory, but will print five to 10 times faster if you have enough. The standard for graphics on an HP LaserJet, for instance, is about 2MB. A color image can be 4MB or more. And an image will need more memory if it uses many custom PostScript fonts. An alternative if you're short of memory is to convert the image from vector to raster before you print. Many special add-on boards are available to do it. *Steven S. Ross*

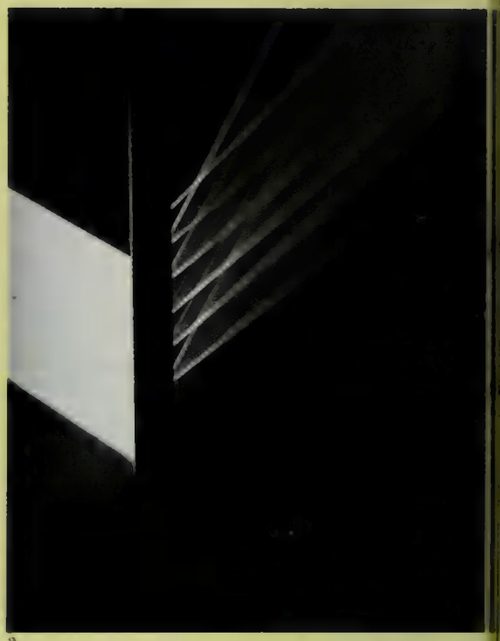
Problem-solving Glazings



1



2



3

Though maybe not as familiar to architects as other European glassmakers like St. Gobain and Pilkington, Schott has nevertheless achieved an outstanding reputation in specialty glass products. Perhaps because sunlight across northern Europe is sometimes scarce, the German corporation has developed various glazing techniques that make efficient use of every precious ray. Shown above is Schott's Okasolar product, an insulating unit with fixed polished-aluminum louvers sealed within the two glass lights. Each individual panel can be designed to meet a specific solar-control program for a given window in a given building on a given site. The louvers admit sunlight in different amounts, from 5 to 60 percent, depending on the incident angle. Low-angle winter sun (1) enters freely, with much of the light bounced deep into the room while the rest contributes to passive solar-energy gain. Higher-angle summer sun (2) and (3) is mostly reflected, reducing the cooling load and cutting glare. At viewing distances, the louvers essentially disappear (4). The profiles of the louvers themselves can be selected for the solar



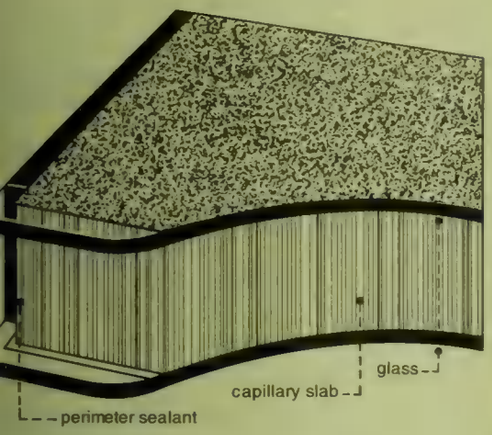
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Plastics for Severe Environments

New York State's Department of Mental Health needed a corridor glazing impact-resistant to state standards for a secure facility. It had to fit in a frame that allowed the largest-possible clear-vision area, for patient observation, and it had to pass a one-hour fire test. Since plastic glazing would be consumed in a fire, GE Plastics, maker of Lexan, worked with Star Sprinkler Corporation to develop a sprinkler-assisted glazing system. With greater impact strength than wire or ceramic glass, the polycarbonate panels do not need fire-rated frames, as the sprinkler releases a water curtain that wets down and protects the sheet. The firms developed empirical data and received a variance from the governing code agency. Glazed with Lexan MR5 sheet (or Lexgard composite laminate where more severe threat criteria are anticipated), and using Star's PH-2 head, large corridor windows have been installed in several psychiatric hospitals in New York. BOCA lists the assembly as an "associated product" in realistic fire situations. GE Plastics, Pittsfield, Mass. *Circle* **319**

Dade County's new Large Missile Impact test (see Short takes, page 42) is fast becoming the standard against which various window components are tested. Extech, a maker of industrial and commercial window and skylight systems, has already successfully passed the rigorous protocol with one of its standard frames, glazed with 1/2- or 3/8-in. monolithic panels, or 16-mm cellular, polycarbonate lights. Though test samples need to survive wind-load pressures of "only" 80 psf to pass, these windows were tested to 150 psf without failure (8). The high-wind code describes the requirements for both primary glazed openings and shutters, a category that includes overglazing panels. These products must not only resist the pressure-cycling of the test itself, but must not deflect enough to contact the primary glazing. A new fixed primary window, with a frame strong enough for plastic or glass lights as large as 5- by 7- and 1 1/16-in. thick, is now being tested to hurricane loads. Extech, Pittsburgh. *Circle* **320**

nsulating-glass units and plastic-sheet glazing materials can now be pecified in assemblies that meet stringent requirements for solar ontrol, fire-rated security, and resistance to hurricane-force winds.



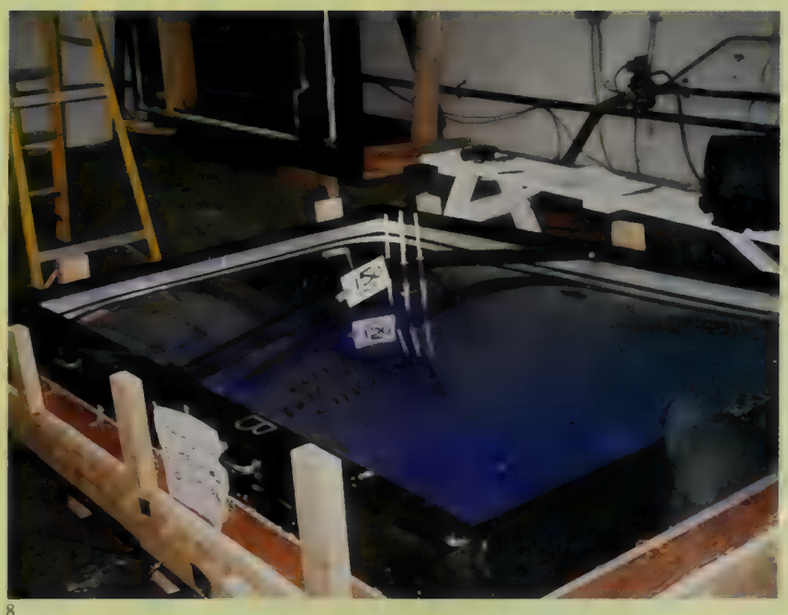


6

ıgles anticipated in either vertical or sloped stallations. The monolithic lights can be ɔecified in low-E, wired, laminated, or other ass types. Lead time for U.S. delivery of ıstom-made Okasolar panels is said to be ght weeks. Per square foot cost, compared a standard IG unit at $8 psf, would be ɔout $12 psf with identical glass; weight is most the same. Supplied with a project's titude and site orientation, proprietary ftware can project the solar angles and ad for each window in the building and ·sign the louvered panel for that location.

Light-diffusing OkaLux is not quite so new to the U.S., having been installed in prominent buildings such as Arata Isozaki's Museum of Contemporary Art in Los Angeles, and the Astor Court at the Metropolitan Museum of Art in New York City. Also a hermetically sealed insulating configuration, here the between-glass space is filled with ■ "capillary slab"—bundles of fiber-optic-like strands oriented perpendicular to the lights and faced on both sides with a diffusing mat (5). These strands "collect" daylight, transmitting it to the interior at levels as high as 72 percent. The daylight that passes through the panels is truly diffuse, without sharp shadows, hot spots, or glare; its color-rendering factor is 97/98 (6). Thermal performance improves with the thickness of the insulating/light-diffusing layer, to a U-value of 1.14 for a 40-mm-thick slab, without significantly diminishing light transmission. The glass fibers render the panel almost opaque to most UV radiation, and specifying laminated glass will block the rest. Schott Corp., Technical Glass Division, Yonkers, N.Y. *Circle* **318**





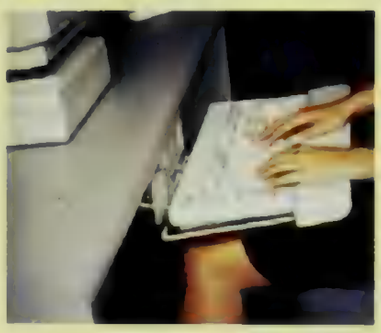
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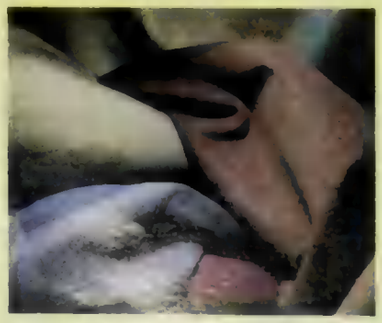
321. Three-user washbasin
A one-piece fixture with three individual handwashing stations run from one plumbing connection, the Express lavatory is made of a granite-look solid-surface material said to resist stains, sharp impacts, and burns. Unit comes with metering faucets that meet water-conservation and accessibility standards. Bradley Corp., Menomonee Falls, Wisc.



322. Conference equipment
A new line, the Teamwork collection consists of "collaborative" work products--tables, presentation boards, storage carts and A/V units--said to give a uniform, designed look to meeting and conferencing spaces. Pictured: a mobile presentation easel holding a dry-marker white board, tack panel, flip-chart storage, and a display rail/handle. Metro Furniture, Burlingame, Calif.



323. Healthier keyboard
The design of this add-on system was based on extensive research said to demonstrate how keeping hands in a vertically neutral position while keyboarding and mousing prevents carpal tunnel syndrome, neck and shoulder injuries, and back and circulation problems. Adjustable keyboard tray has a negative slope, relieving all stress. Proformix, Whitehouse Station, N.J.



324. Low-upkeep upholstery
Made of Zeftron 200 solution-dyed nylon, described as exceptionally fade-resistant and colorfast, Powerhouse upholstery fabric is being marketed specifically for healthcare, hospitality, and heavy-use corporate settings. Styles include a textured boucle, a crepe, florals, and a scroll pattern, all of which can be cleaned as needed using a diluted bleach solution. Maharam, New York City.



325. Glazed terra-cotta potte
A reissue of Gladding McBean garden pottery and ornamental pieces, made from the original mol dating from 1890 to 1926 , includes this 80-lb Art Nouveau vase in Arroyo Green, one of 25 glaze colo available. Hand-crafted items such large "oil jars", urns, pedestals, planters, tables, and benches can used indoors and out. Gladding McBean Pottery, Culver City, Calif.



326. Hybrid seating
Halfway between a stool and stand ing up, The Stitz permits a wide range of individual leaning motion Suitable for work situations that need an upright position, for confe encing, or for phone schmoozing. A sand-filled rubber base gives stabi without marring floors. Made in Germany; designed by Roericht Product Development. Wilkahn, I New York City.



327. Medical casework
Made primarily of 18-gauge steel, Framework Furniture System includes base and suspended cabi nets, wall cases, and space-saving vertical storage designed for the ease-of-use and low-maintenance requirements of doctor's offices an surgery centers. Components wor together to give a "built in" appea ance. American Seating, Grand Rapids, Mich.



328. Structural vinyl railings
Based on a thick-walled extruded vinyl tubing reinforced with #40 p at posts and top horizontals, the Avcon rail system meets BOCA impact code at any point. Available standard and custom rail designs a a range of co-extruded colors, the weather-, pollution-, and UV-resistant components are said to be competitive with welded-pipe railings. Avcon, Inc., Toms River, N.J.

Short takes

Hurricane code blows in.
New Dade County (Florida) hurricane-resistant building-code requirements go into effect May 31. Designed to keep the building envelope intact and prevent the sudden exterior pressurization that blew off many roofs during Hurricane Andrew, the new standards needed a testing protocol. Called the "large missile impact" test, the procedure requires windows and doors to remain intact (*not* unbroken) after receiving two blows from an 8-ft-long 2 by 4 travelling at 34 mph, then 9,000 cycles of pressure testing.

Knocking out knockoffs.
Imagineering, Inc., of Rockport, Maine, makers of Weatherend outdoor furniture, successfully sued a copycat competitor under trade dress laws. The U.S. District Court, Southern District of New York, ruled the imitation—of style, constructio details, even paint type and adver ing copy—had far exceeded flatter and awarded the plaintiffs substan fees and punitive damages.

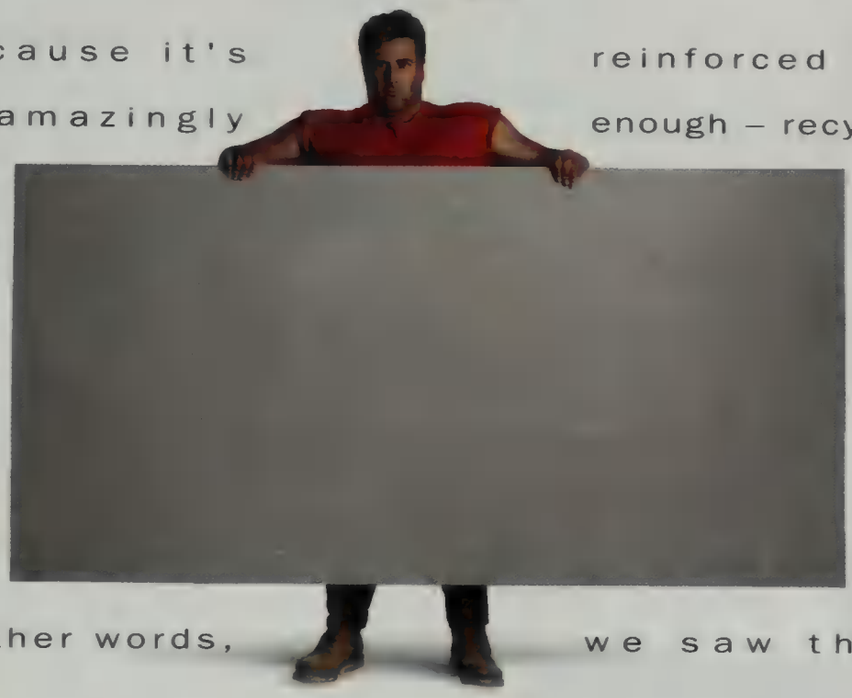
Rainforest marketing. Und a 1994 sales promotion, when arch tects and designers specify Azrock wood-look vinyl strips, the flooring manufacturer will preserve a little piece of the rainforest in their nam

TOUGH as nails.

The first time you hammer a nail into a FiberBond® wallboard, you'll know just what we mean. It feels like you're putting the nail into the wall, not through it. FiberBond wallboard is extremely strong

And *strong enough*

and solid because it's reinforced with cellulose fiber from – amazingly enough – recycled newspaper. It can take more abuse than or-



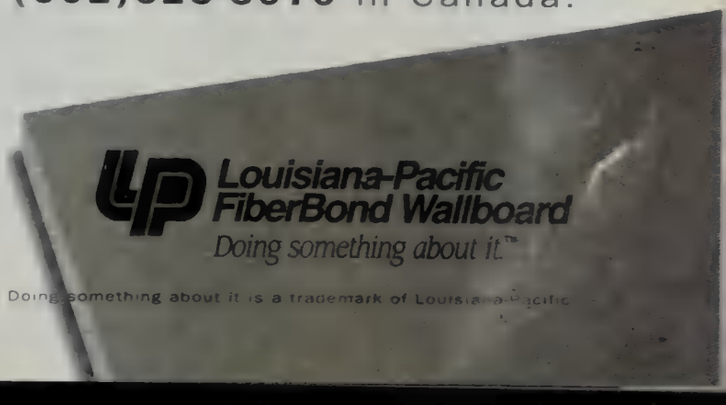
TO keep

dinary drywall. And it's more fire-resistant and sound absorbent. In other words, we saw the problems

them IN THEIR

with ordinary wallboards and did something about it. To learn more about the FiberBond advantages, call **(208)772-6011** in Hayden Lake, daho, **(708)517-8833** in Chicago, Illinois or **(902)625-3070** in Canada.

place.



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Circle 16 on inquiry card

Continued from page 21

Olympics Light

An article in RECORD LIGHTING [February 1994, Carrying the Torch from Super Bowl '94 to Olympics '96] incorrectly stated the position of the Environmental Protection Agency (EPA) on the proposed nighttime lighting of the Atlanta skyline. EPA has been discussing the plan with its sponsors, and has expressed concerns about the potential net increase in electricity use (and thus pollution) that could result from the proposal. We are examining various options that would show off Atlanta in the best light during the 1996 Olympics while producing a net environmental benefit. EPA looks forward to "blessing" a lighting plan consistent with that goal.

Robert M. Kwartin
Director, EPA Green Lights Program
Washington, D. C.

Light Language

A gentleman who works for a major lamp company frequently finishes off his talks and presentations with : "...come on, guys, it's real, it's not artificial." I had not realized this was contagious, but your editorial in the February 1994 RECORD LIGHTING makes it seem so. Of course there is such a thing as artificial light; it is light that has been man-made, as opposed to occurring in nature (which is called "natural" light).

It is difficult to judge which is more regrettable–the presence of one more voice corrupting the English language, or one more person claiming to speak for a profession he does not understand.

Douglas Baker
Consultant
Newport, R. I.

RECORD LIGHTING Editor Charles Linn replies: If there really is such a thing as artificial light, this letter must be from an artificial lighting consultant. Thanks for helping me understand your profession.

Crystalizing Influence

A word of appreciation for Jim Russell's interpretation of the Southgate Block [RECORD, October 1993, pages 114-115]. You helped me unravel a tangle of interests and concerns which the project was trying to address, and made more intelligible what in my own mind was somewhat obscure.

I particularly enjoyed your summarization of the project's composition in terms of "rhythm" and the grouping of its various details under the rubric of "conveying a solidity." On some reflection, this is the net effect of what we were trying to achieve.

The discovery of an audience for my firm's work on this modest building type was unexpected. Thank you for your commitment in bringing it to light.

Jonathan Levi, Architect
Brookline, Mass.

Clarification

In our story on seismic and preservation ["Landmark Dilemma: How Much Upgrading Is Enough?" RECORD, February 1994, page 28], the description of the Sheraton Palace upgrade should have noted that only one shear wall was extended the full building height. Further, while H.J. Degenkolb Associates were peer reviewers on Skidmore, Owings & Merrill's design, and offered other consulting services to the owner, they were not consultants to the architect-engineer.■

Power.



5 minute plots

Now, with a new low price, the HP DesignJet 200 monochrome inkjet plotter is more affordable than ever.

It's true. For about the price of the average pen plotter, the HP DesignJet 200 gives you crisp, 300-dpi, D-size plots in under five minutes.

Of course, HP's proven inkjet tec means more than just fast plotti means no more pen-related prob No more skipped lines. No more clogging. And our smooth, quiet

ask Control *continued from page 35*
he West Bend study, feels that "if we are ruly concerned about being globally competitive, we must find ways to maximize roductivity and creativity from our human-esource base. People are different, and here must be greater individual control over he workplace environment." Cornell professor Alan Hedge agrees, adding that employees are becoming more aware of this sue, and as emerging job markets create a emand for skilled workers, business will ave to improve air quality to attract them."

ut not all experts agree that conventional vac technology should be scrapped. Iahadev Raman of Ove Arup & Partners' ew York office (which has installed their wn floor-plenum supply) says "it's a gross versimplification that VAV-based technolo-y doesn't work. Unfortunately, the bland rrangement seen in too many spec build-gs is eventually overwhelmed by a demand gher than the design load." Individual con-ols require a careful integration of lighting, vac, and controls that may be too sophisti-ated for some building owners to manage. aman also points out that some building codes make sharing of space by cables and ventilation difficult. Others have expressed concern about keeping underfloor units clean, and avoiding airflow and cabling conflicts.

Individual controls or furnishings-based systems may become more widespread through specialized installations such as video monitor-intensive trading rooms (page 35). In some areas of the country, individual controls, combined with a window interlock that shuts off local mechanical ventilation, may improve the prospects for natural ventilation. (Open windows in buildings with large ventilation zones often increase air-conditioning loads rather than decrease them.) Likewise, individual controls may make an energy-saving daylighting strategy more viable.

How quickly personal environmental control catches on will likely depend on how soon its components become more flexible, less bulky, and interchangeable, rather than furniture-based; how well existing buildings can be retrofitted; and whether researchers continue to find substantial productivity benefits. In the book *Behavioral Issues in Office Design*, author J. D. Wineman points out that human-resources costs represent from 90 to 92 percent of a building's cost over 40 years. Thus, even tiny improvements in productivity offer stunning paybacks. ■

Further Information

- "IAQ, Productivity, and Occupant Control," in *Indoor Air Quality Bulletin*, December 1991. P. O. Box 8446, Santa Cruz, CA 94061-8446 (408/426-6624)
- "The Impact of Personal Environmental Control on Building Energy Use," by John E. Seem and James E. Braun in *ASHRAE Transactions*, 1992, V. 98, Pt. 1. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. 1791 Tullie Circle, N.E., Atlanta, GA 30329 (404/321-5478)
- "Comfort Control for Short-Term Occupancy," by M. Fountain, G. Brager, E. Arens, F. Bauman, and C. Benton, to be published in a forthcoming issue of *Energy and Buildings*.

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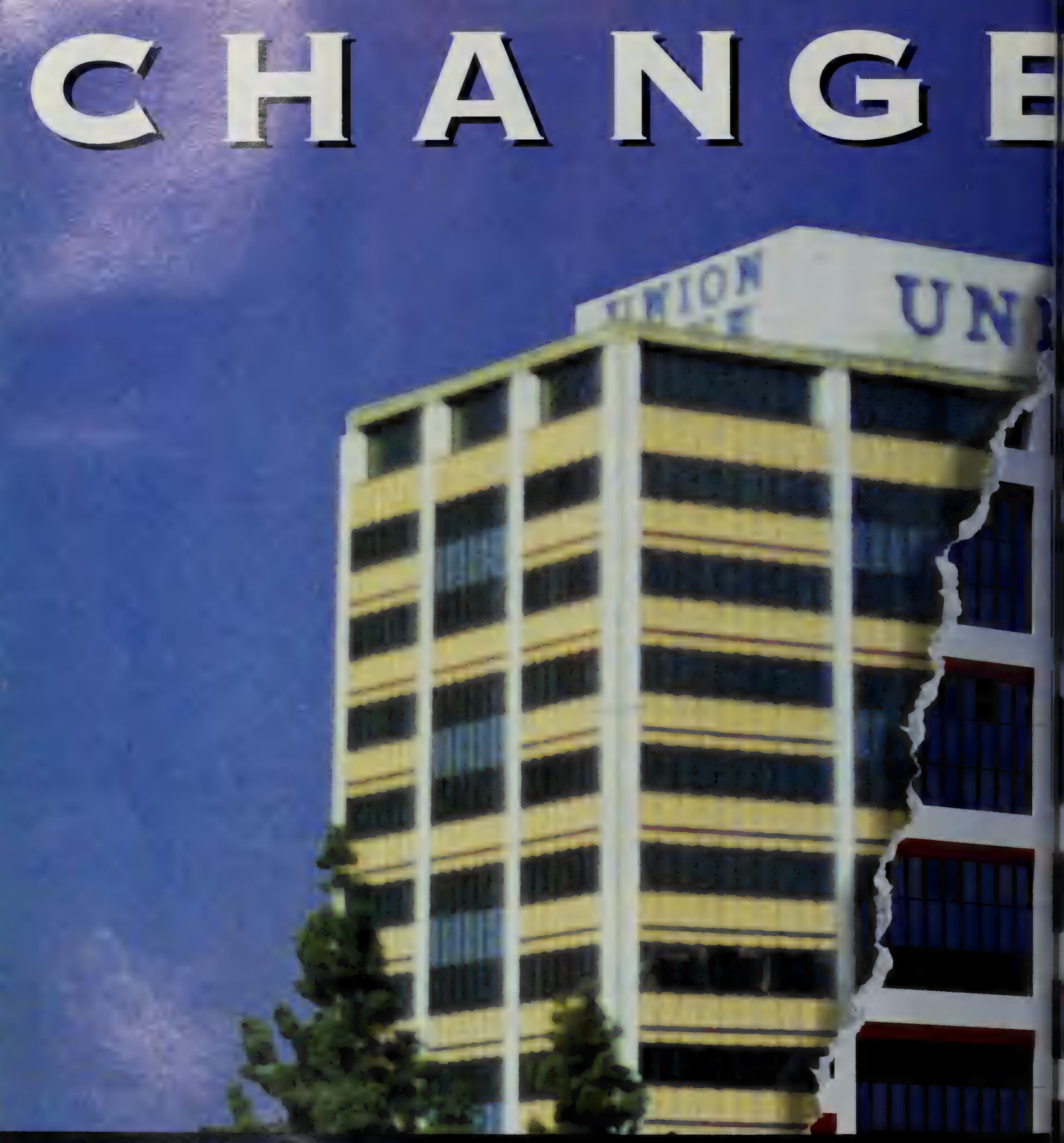
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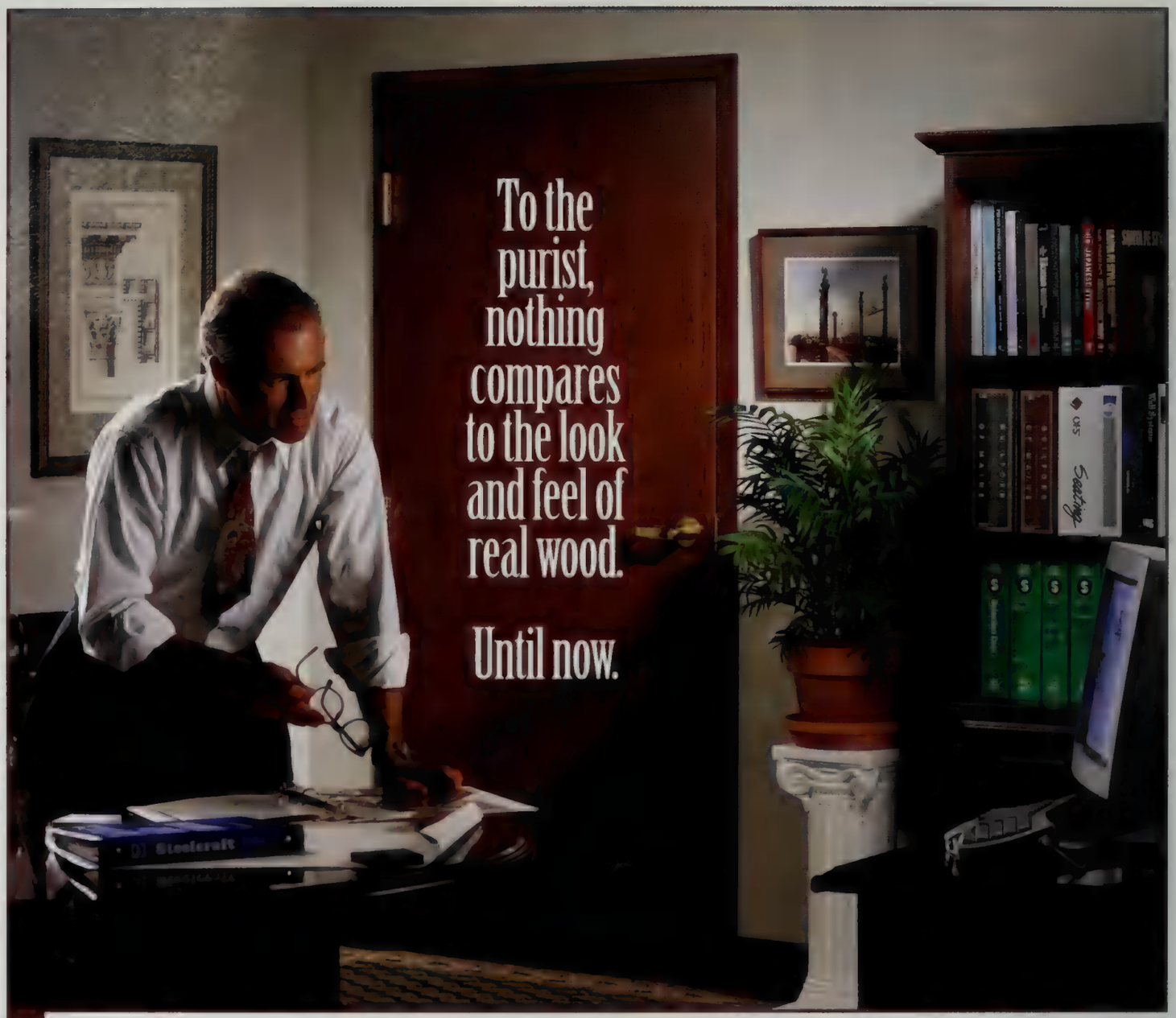
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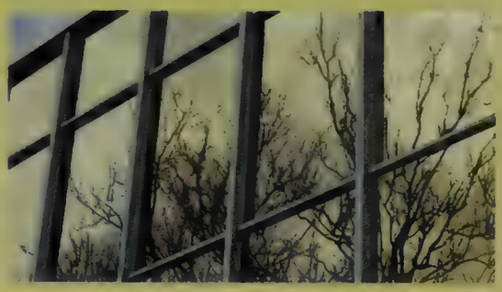
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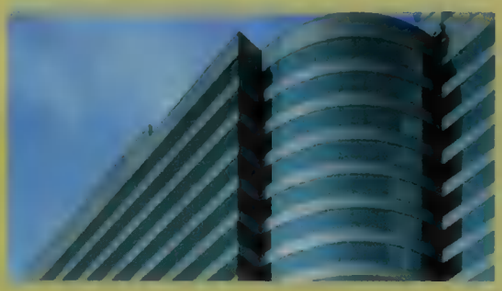
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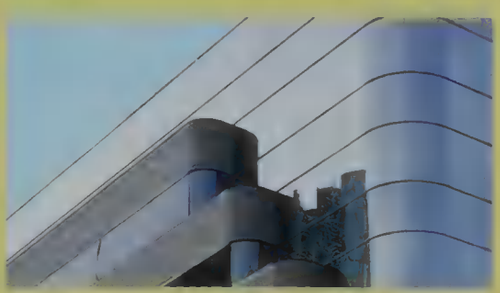
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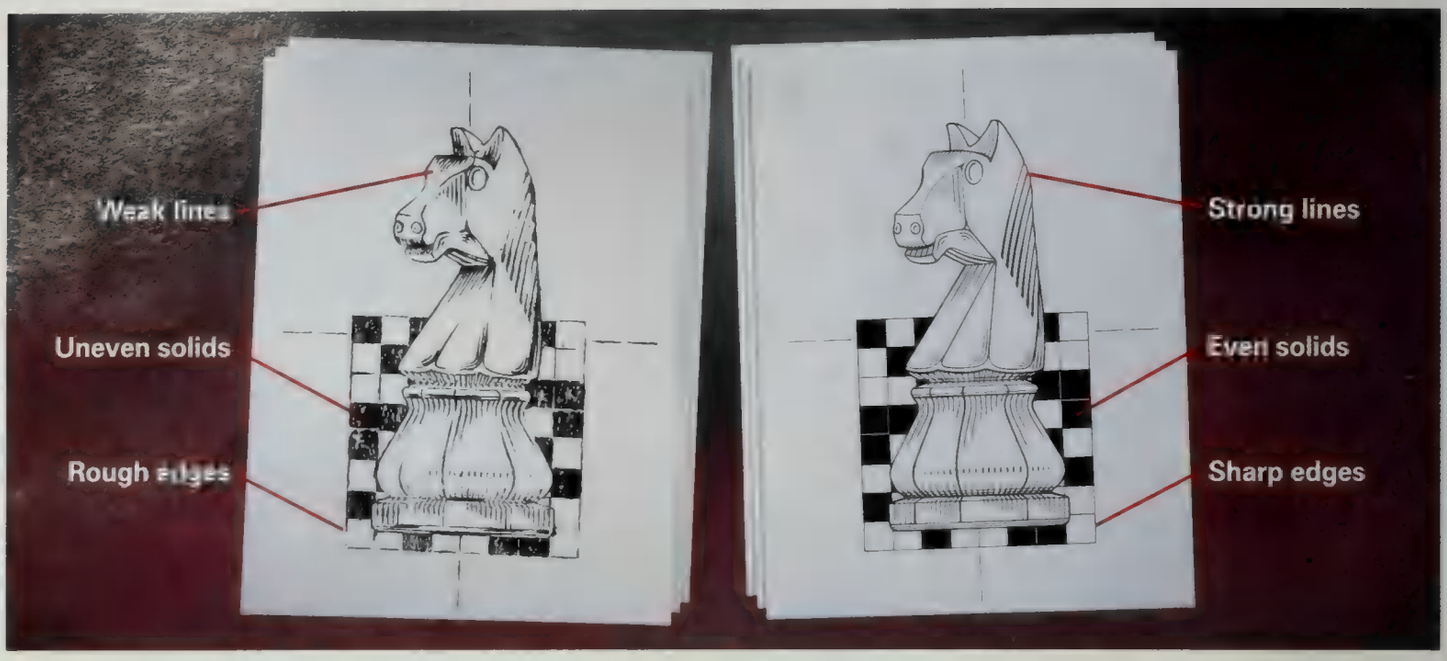
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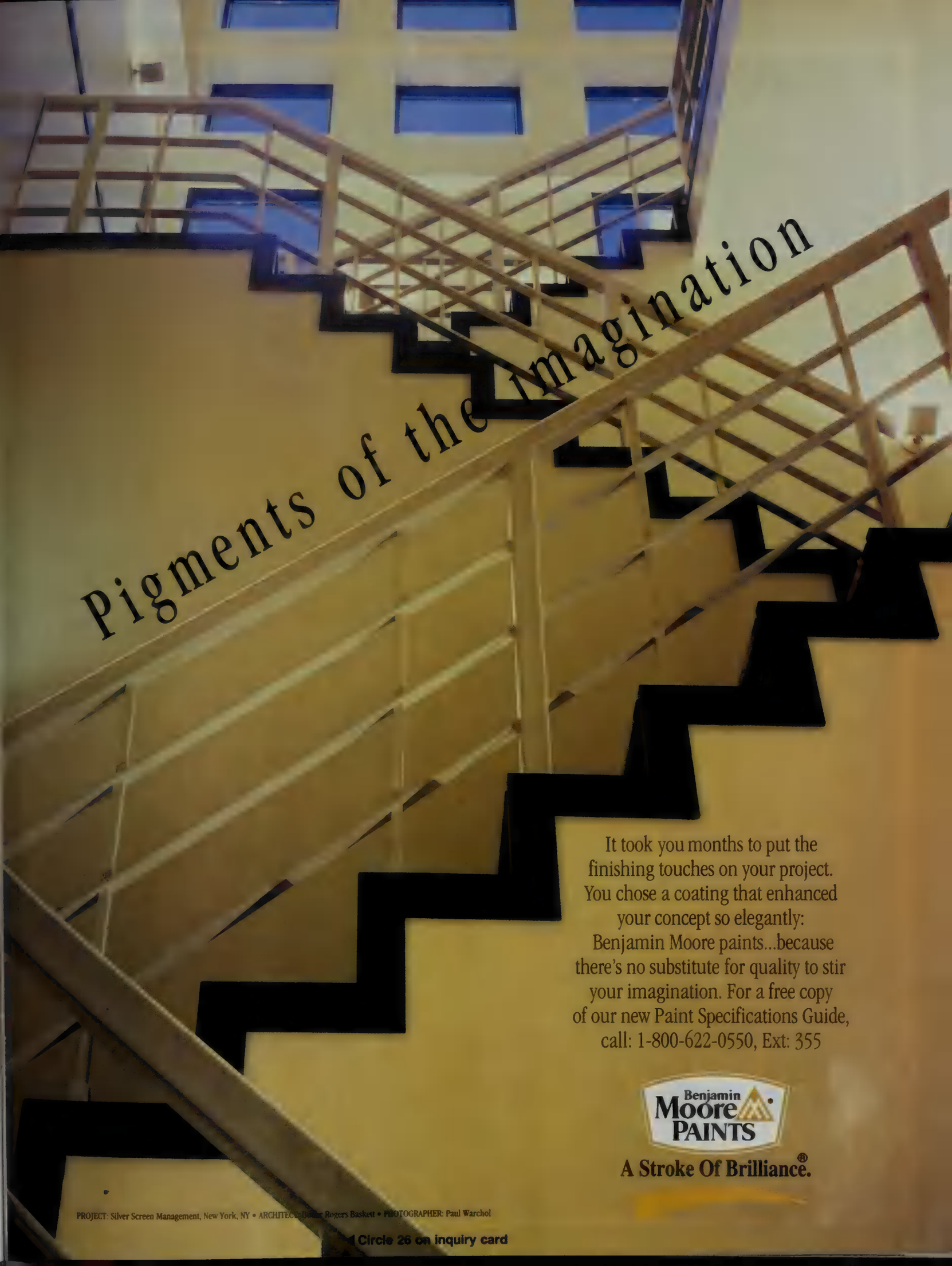
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(Costs based on: Metal @ $5.75 per sq. ft. installed, plus $5000 maintenance for the first 10 years and $5000 maintenance for the second ten years; Built-up @ $3.00 per sq. ft. installed plus $367,000 maintenance for the first ten years and $367,000 maintenance for the second ten years.)

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* Prepared by James E. Grimes, A.I.A. (May 7, 1990). Excerpts from Metal Architecture 1991 presented by American Iron & Steel Institute, Washington D.C.

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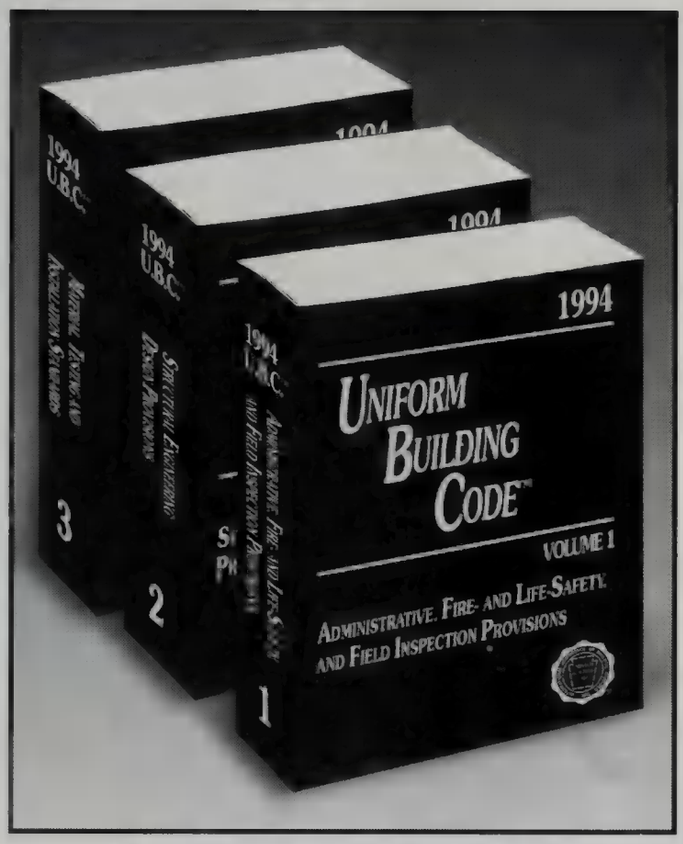
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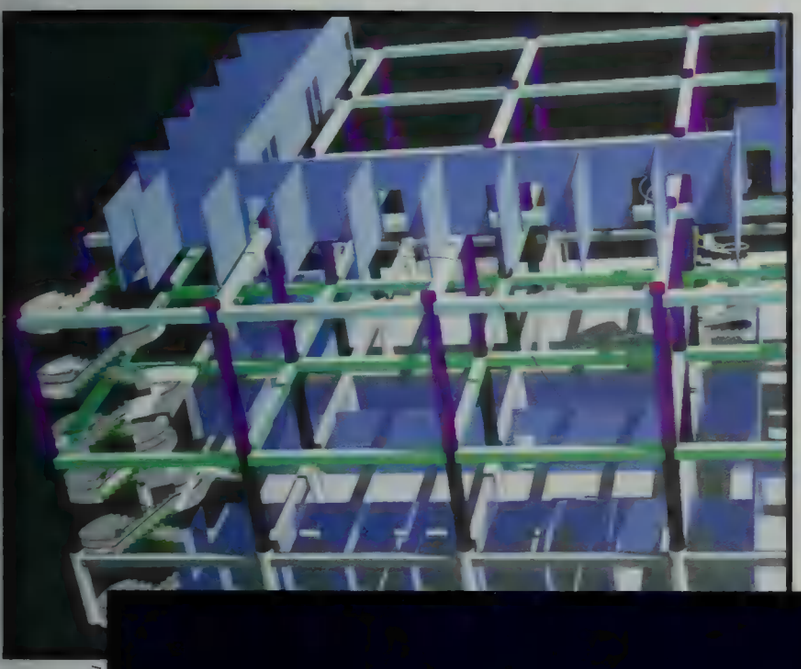
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Art museum rendered using Intergraph's ModelView software.



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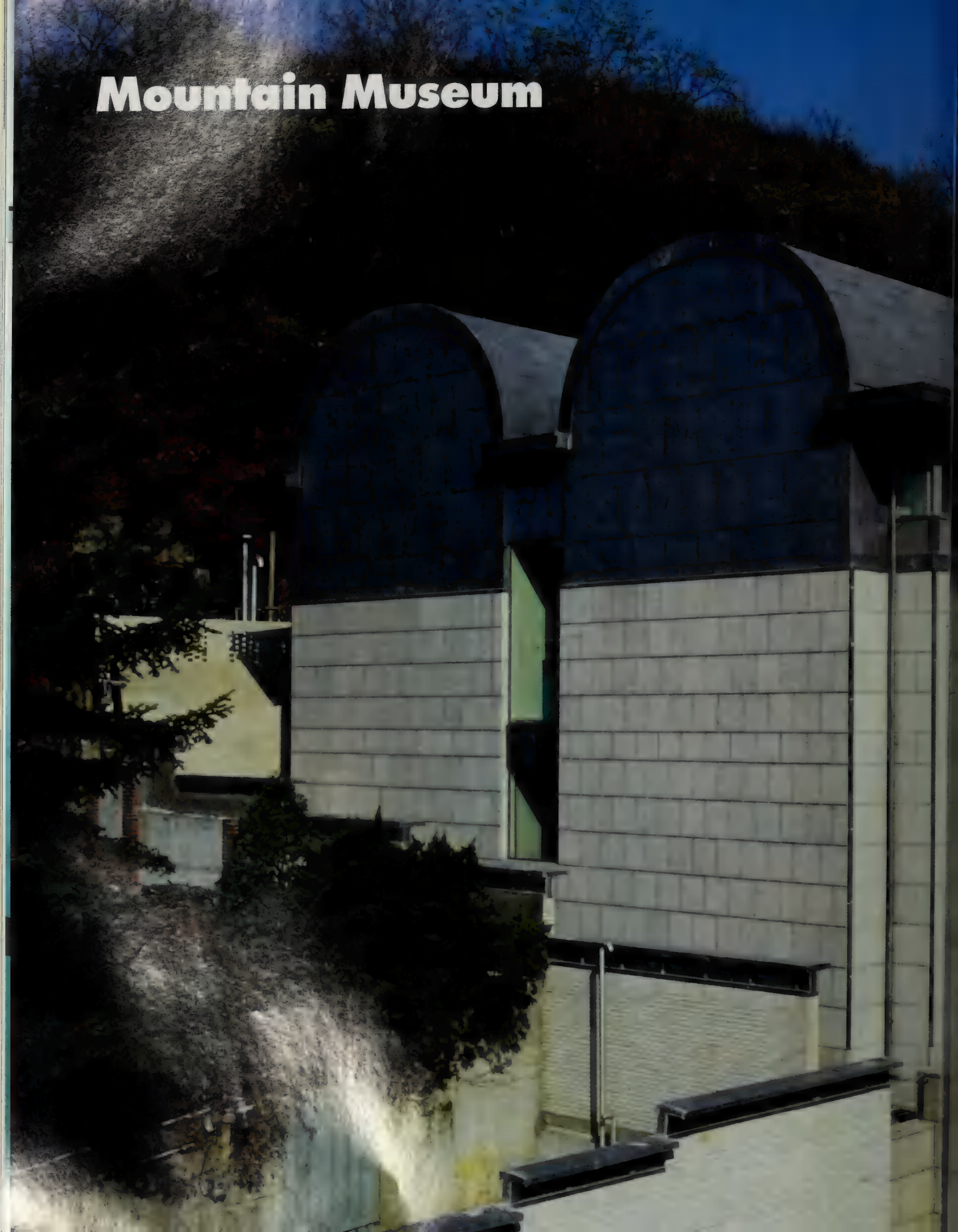
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"The image of the American abroad has long been romanticized to represent freedom and individuality," writes correspondent Claire Downey in her report on Frank Gehry's American Center in Paris (page 86). Gehry as expatriate is particularly apt. Born in Toronto, he came to Los Angeles in 1949 to attend UCLA. In the early years of his practice, Gehry, by his own admission, associated more with artists than architects—to detractors he was unorthodox, to supporters he was avante-garde. He was an outsider both geographically and professionally and this critical distance helped foster a unique vision. Yet later, widespread acceptance made him the ultimate insider: he was characterized by the Pritzker jury in its 1989 award to him as "refreshingly original" and, ironically, "totally American." Also described as quintessentially American is the architecture of Robert Venturi and Denise Scott Brown, a portrait borne out by their fire station for Disney in Orlando (page 94). Henry Smith-Miller and Laurie Hawkinson invest a mixed-use building in Telluride, Colorado with turn-of-the-century Americana, borrowing imagery from old mining towns (page 76). American architecture takes different form in Haines Lundberg Waehler's design of the Federal Reserve Bank of New York. Located in New Jersey, it gives comfortable suburban scale and presence to what is essentially a processing plant for money (page 80). For many architects who have emigrated here, recognition and commissions in this country help solidify their position at home. Thus, Cambridge-based Kyu Sung Woo returns to his native Seoul to build a museum for celebrated Korean painter Kim Whanki, who himself made his reputation abroad (page 68). This month's Building Types Study (page 98) examines one of the most hotly debated issues in America today: healthcare.
Karen D. Stein

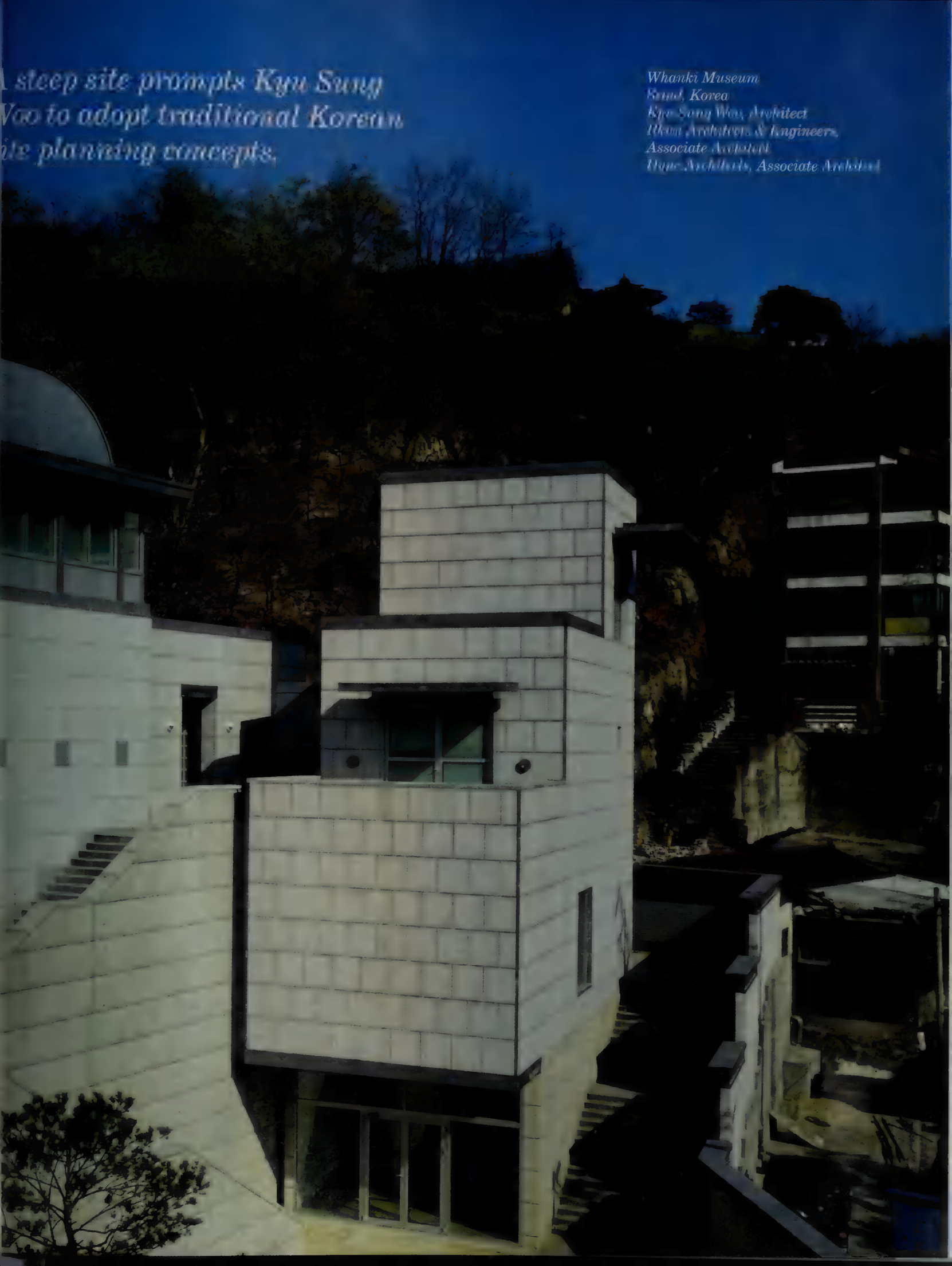
anufacturers' Sources
ted on page 119

Mountain Museum



A steep site prompts Kyu Sung Woo to adopt traditional Korean site planning concepts.

Whanki Museum
Seoul, Korea
Kyu Sung Woo, Architect
Ilsaa Architects & Engineers, Associate Architect
Hyoe Architects, Associate Architect



From the beginning of his career, Kim Whanki, the late Korean painter who made his name in Paris and New York, yearned to open a museum in his native Seoul. Now, nearly 20 years after the artist's death, his dream has finally come true.

Designed by Korean-born Kyu Sung Woo of Cambridge, Massachusetts, the Whanki Museum occupies a 30,250-square-foot site in the Buam Dong Valley on Seoul's northern edge. Selected for its easy access and picturesque terrain, the narrow valley is populated with walled, post-Korean War residences and a smattering of small shops—all bound together by a circuitous network of streets that conforms to topography and property lines rather than any form of city grid.

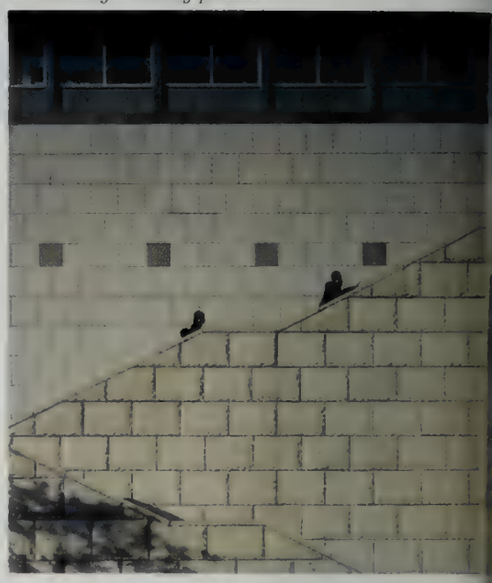
Like its neighbors, the museum's precinct is outlined with a wall, an element which Woo calls "a very important part of Korean architecture." Because it establishes a clear, formal boundary, the wall has been used to order Korea's rugged landscape for centuries. Inside the wall, Woo adopted the traditional additive method of site planning, adding a second building to make the most of the site's limited area and mediate its substantial grade differences. Not only does the 4,600-square-foot annex house a gift shop and temporary exhibition space, the 11,470-square-foot main building itself is composed of a series of discrete volumes housing galleries, administration, and an apartment for an artist-in-residence. And by embedding the three-story, steel-framed building into the hillside, Woo was able to provide high space for Whanki's large canvases, which is the focus of the collection, without overwhelming the scale of the neighborhood.

The heart of the museum is a 26-foot, cube-shaped hall capped by an exterior courtyard. Skylights and the courtyard's glass-block enclosure, which acts like a clerestory, forge a connection to the outside and bathe the room's white walls with light that is celadon-colored, a sea-green shade associated with Korean porcelain. Used for displays and assemblies, the room is wrapped with triple-height, 6-foot-wide stairs which generate the intricate circulation "ribbons" that wend their way in and around the building. While maze-like paths may lack efficiency, Woo acknowledges, they offer museum-goers a rich and varied experience. Even the exterior interstitial space between building and wall is filled with stepped walkways, terraces, and rest spots for surveying scenic vistas and remnants of the historic city wall in the distance.

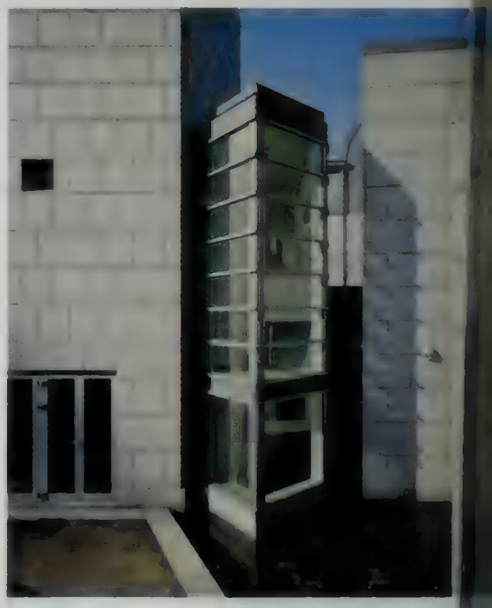
The dramatic high point of the museum is its double-vaulted gallery housing the permanent collection. Here stairs open onto a spacious room with a 12-foot-high picture window framing a view of In Wang Mountain's craggy peaks. While electric light was essential for conservation, daylight reflected up into the vaults fills the room with all the peace and serenity of a Whanki painting. "A museum does not have to be an isolated area," explains Woo, "it is good to be connected to nature and the life of the city."

A close friend of the painter, Woo was the logical choice to design this memorial. Like Whanki, Woo established his reputation in the West where his practice has focused on housing. His first major Korean commission was the Seoul Olympic Athletes' and Reporters' Village [RECORD, September 1988, pages 118-127], an innovative 165-acre residential facility which was converted into apartments after the 1988 Olympics. The Whanki Museum is a milestone in its own right. One of the first small [illegible] to be built in Korea, it is testimony to the country's growing [illegible] prosperity and resurgent cultural pride. *Naomi R. Pollock*

© *Timothy Hursley photos*

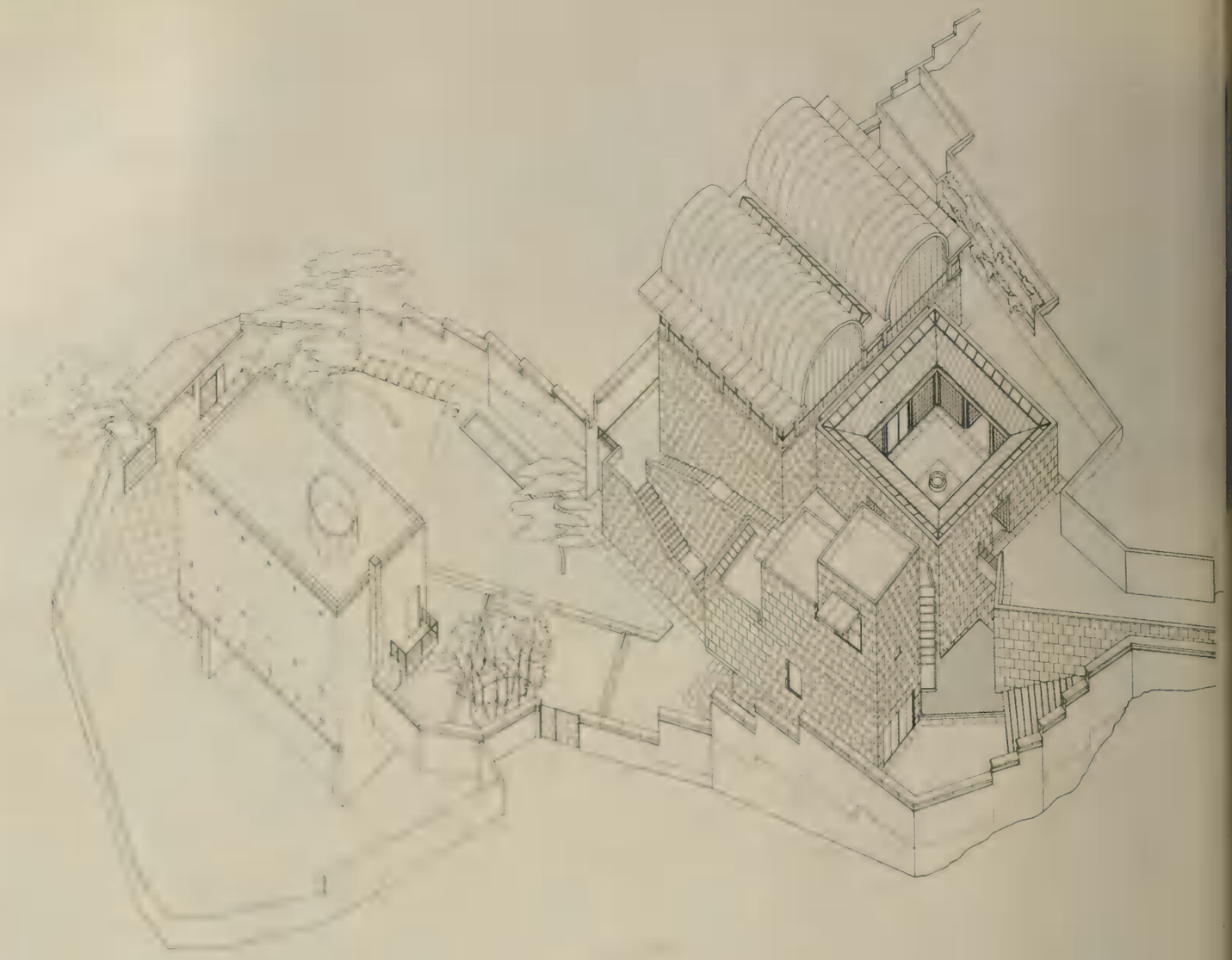






The museum sits on a rough-hewn granite base, its walls clad with smooth granite panels (top and bottom). The annex and pound wall are made of contrasting concrete brick (middle). Elements meeting the sky are covered with lead-coated copper (opposite)

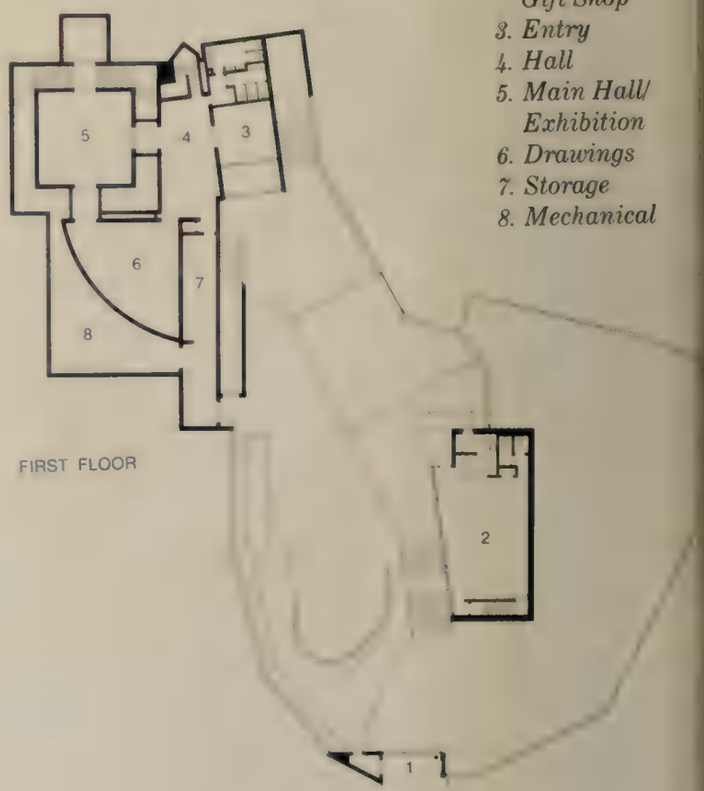




Up Close

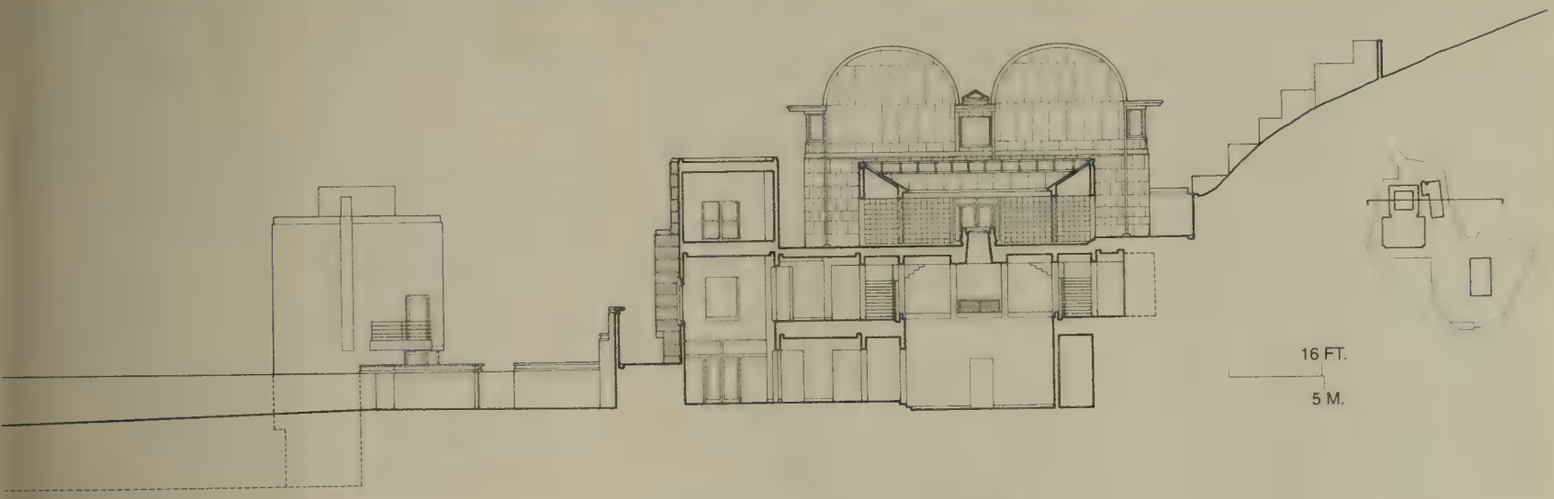
Siting in the tradition. In contrast to the West (Wright excepted), Korean buildings are seldom sited on mountain tops. The Whanki Museum is no exception: the main building's steel frame is perched inside a concrete basin set into the hillside. Like a traditional palace, the building is composed of several distinct pieces united by a central courtyard (above and opposite). Enclosed with glass block that lets light filter into the main hall below, the courtyard (the structure in the middle is a light-well), is covered with masato stone dust. Midway through construction of the main building, a second parcel of land was acquired for the annex. Clad with Korean concrete brick, the annex's simple rectangles contrast sharply with the complexity of the granite-covered main building. In addition to fulfilling left over needs, the annex creates a generous entry sequence for the entire museum. The whole composition is tied to the site's terraced landscaping that highlights the site's grade changes; it was designed by the Seoul-based landscape architect [illegible] van Valkenburgh.

1. *Gate*
2. *Reception/Cafe/ Gift Shop*
3. *Entry*
4. *Hall*
5. *Main Hall/ Exhibition*
6. *Drawings*
7. *Storage*
8. *Mechanical*



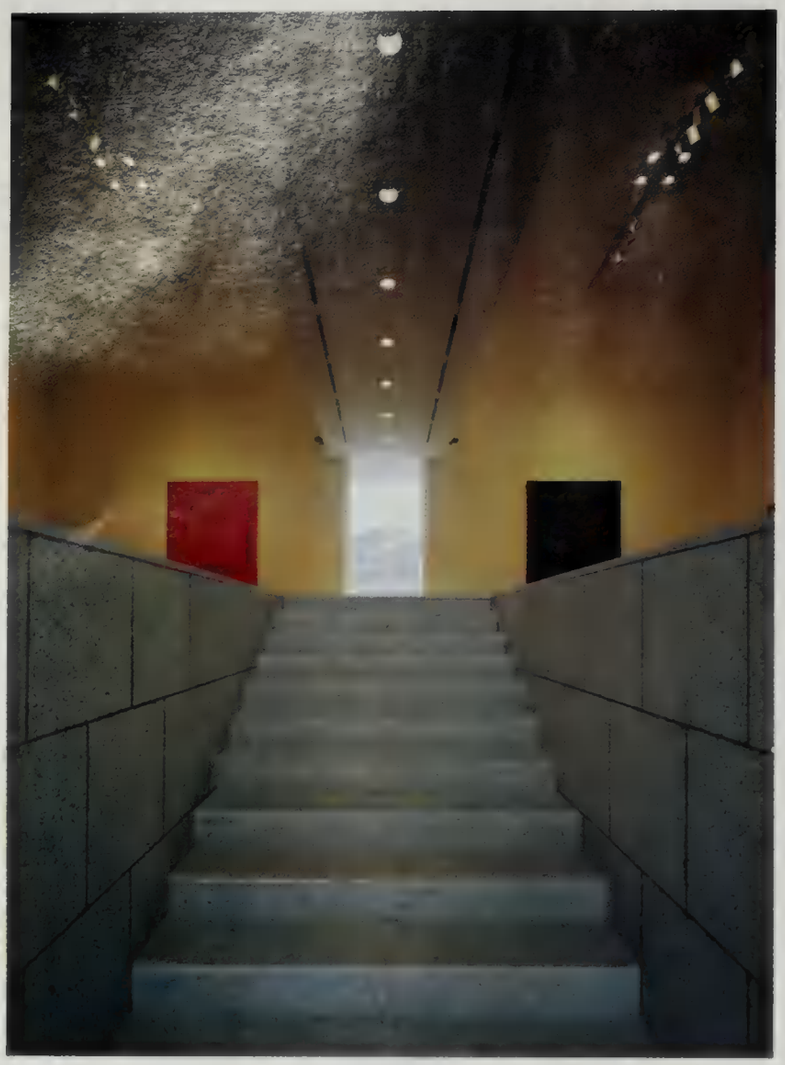


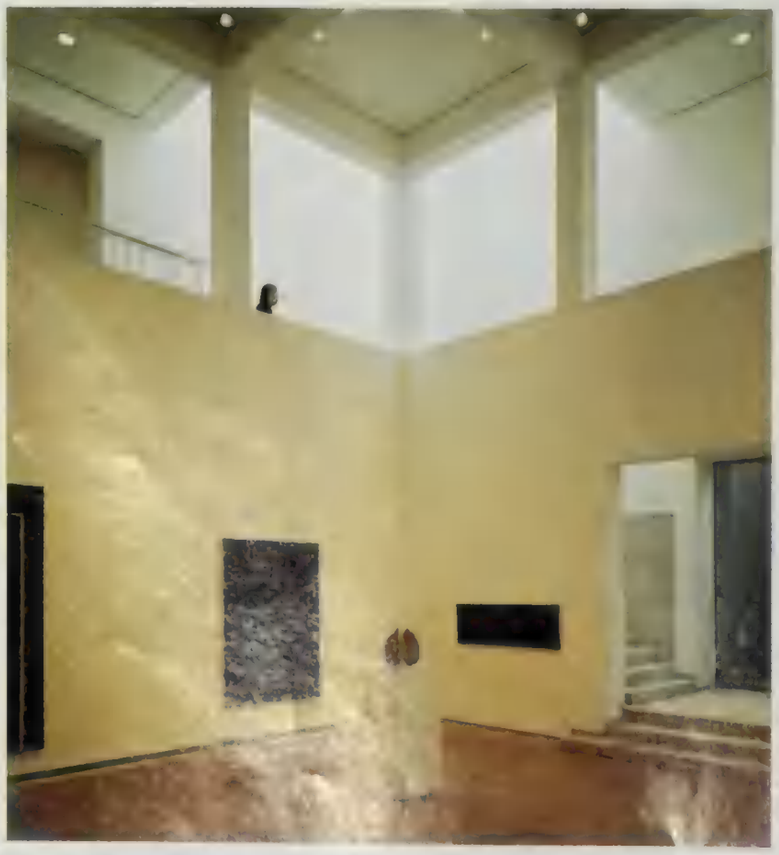




9. *Temporary exhibition/ Lecture*
10. *Director's office*
11. *Library*
12. *Permanent collection*
13. *Courtyard*
14. *Studio*
15. *Terrace*







The museum's grand finale is the double-vaulted gallery with its view of In Wang Mountain (left). The main hall's roof structure supports the exterior courtyard above. An oculus, skylights, and glass block fill the room with daylight. The floor is composed of delicate strips of wood (bottom and opposite).

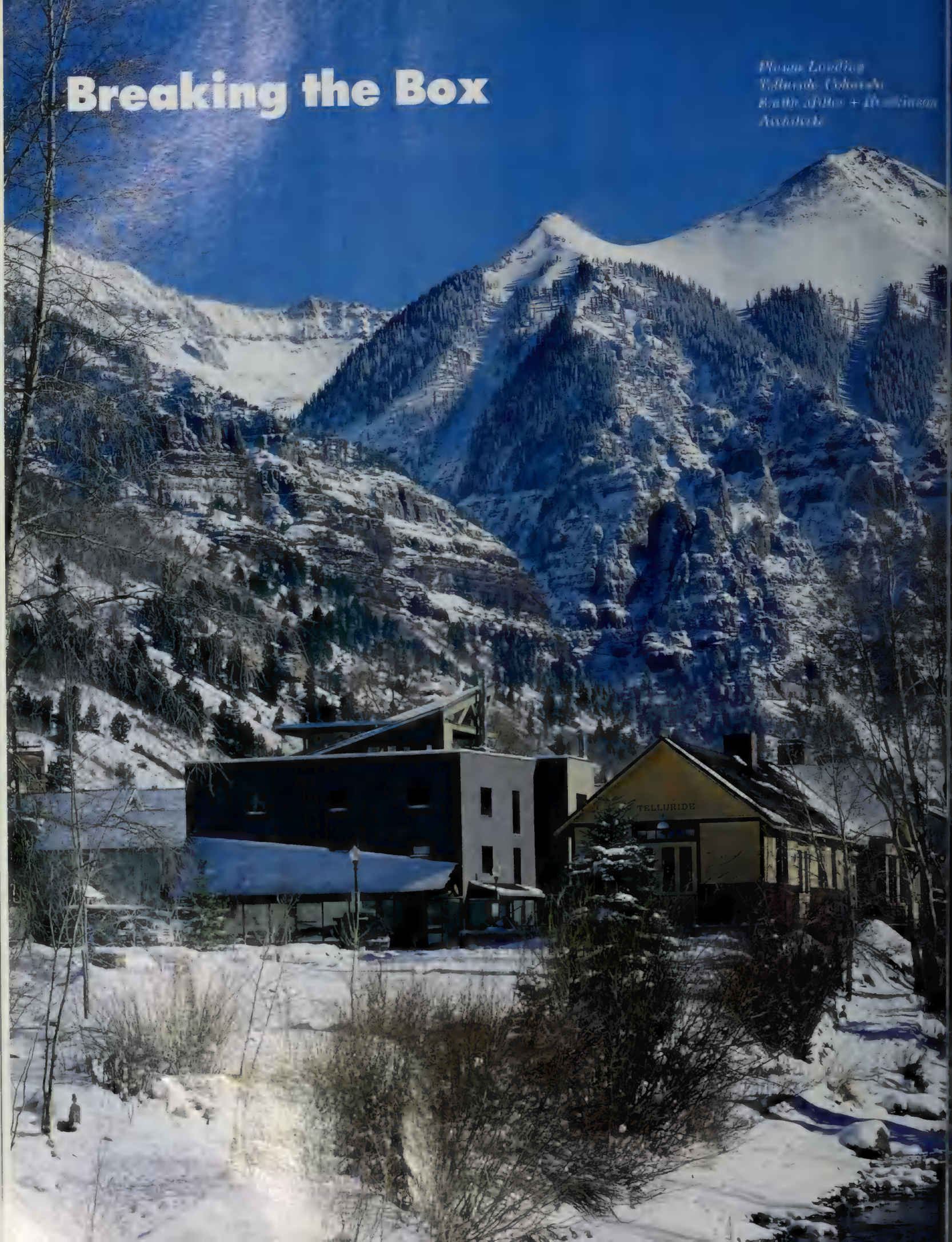
Credits
Whanki Museum
Seoul, Korea
Owner: *The Whanki Foundation*
Architect: *Kyu Sung Woo Architect—Kyu Sung Woo, principal*
Associate Architects: *Ilkun Architects & Engineers; Dyne Architects*
Engineers: *Hanna Group Architects & Consulting Engineers (structural); Bow M.I.E. Consultants (mechanical); Sae Han Engineer Consultants (electrical)*
Consultants: *Powell Lighting Design (lighting); Cosentini Associates (mechanical); Michael Van Valkenburgh Associates (landscape)*
General Contractor: *Pull Ham Construction Co., Ltd.*





Breaking the Box

Wheaton Lovelace
Telluride Colorado
Seattle Office + Hutchinson
Architects



ke many small Colorado towns, Telluride achieved fame and fortune n the late 1880s, when its picturesque hillsides yielded vast quantities f silver to bands of itinerant prospectors. By 1891, a train depot for a ew spur of the Rio Grande Southern Railroad was completed to ease ransportation of the precious metal. In 1893, the silver market collapsed, the railroad went bankrupt, and town growth stopped. lthough some mines later became sources for gold and uranium, Telluride never quite matched its high-profile status until it exploited nother of its natural attributes—its slopes. In 1972, the first ski lifts n the mountain opened and, in recent years, Telluride has attracted ki-minded visitors away from nearby resorts like Aspen, crowding he relatively remote town of 1,500.

rchitecturally, Telluride has a split personality. Its history as a ining town has left a legacy of ramshackle wooden shed structures ith flat metal roofs that are clustered in the hills and backyards of rivate homes. Its public face, exhibited on Main Street, is grander, a robust Victorian," according to the guide books. Asked to design a ixed-use commercial/residential building on a prominent site opposite the former train depot, New York City-based architects Henry mith-Miller and Laurie Hawkinson eschewed the "historical" replication of Victorian-like condominium complexes that have sprung up n the outskirts of town. Instead, they found inspiration in the mining tructures, which, they say, derived their form only out of necessity—or shelter and simple, low-cost construction. Their strategy met with itial resistance from the local historic architectural review commission, which seeks to preserve the old town's quaint charm, but won ventual acceptance for its nod to regional vernacular.

he 9,500-square-foot structure is an irregular box, adjusted to ccentuate the view down Townsend Street, which ends at the old epot. Ground-floor office space along Townsend is enclosed by a lass storefront. A large corrugated rusted steel canopy marks the ntrance, recalling the roofs of mine sheds. Entrances to two separate rental units are discreetly positioned on side-streets. Cedar wood iding is stained gray and green to give the effect of aged clapboard iding. The architects reserved their customary structural exhibitionism for the roof, which breaks through the main volume of the uilding. Supported by massive recycled Douglas fir beams, it points ramatically toward the main ski slope, as if to remind visitors of the own's current claim to fame. *Karen D. Stein*

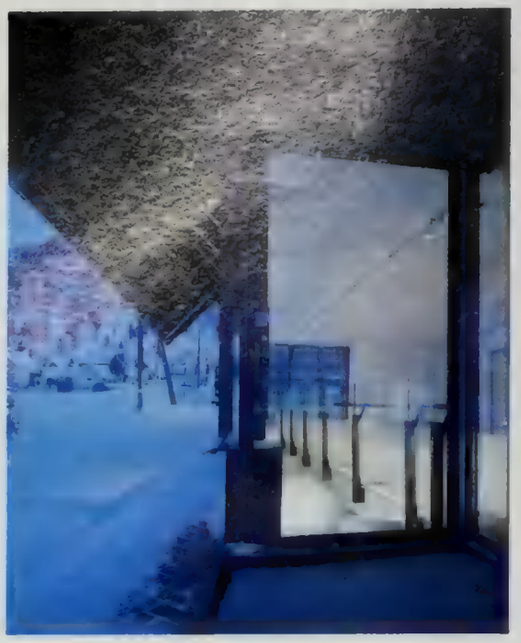


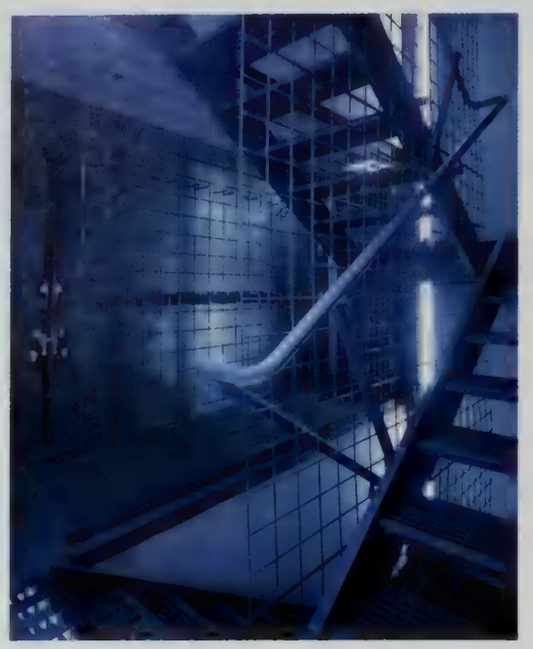
Paul Warchol photos





Plunge Landing is located at the southern edge of Telluride, between the ski slopes and the center of town. On one side it faces the San Miguel River and the former train depot, which has been converted into a restaurant. The new building's tilted awning of rusted corrugated steel wraps the west and south facades and points toward the adjacent historic structure, suggesting an outdoor gathering place in between the two (opposite and left). Plunge Landing's roof breaks through its rectilinear main volume to provide mountain views and admit south light (above). Ground-floor and basement space is for commercial use and the upper three floors are arranged into two apartments with separate entrances.









GROUND FLOOR

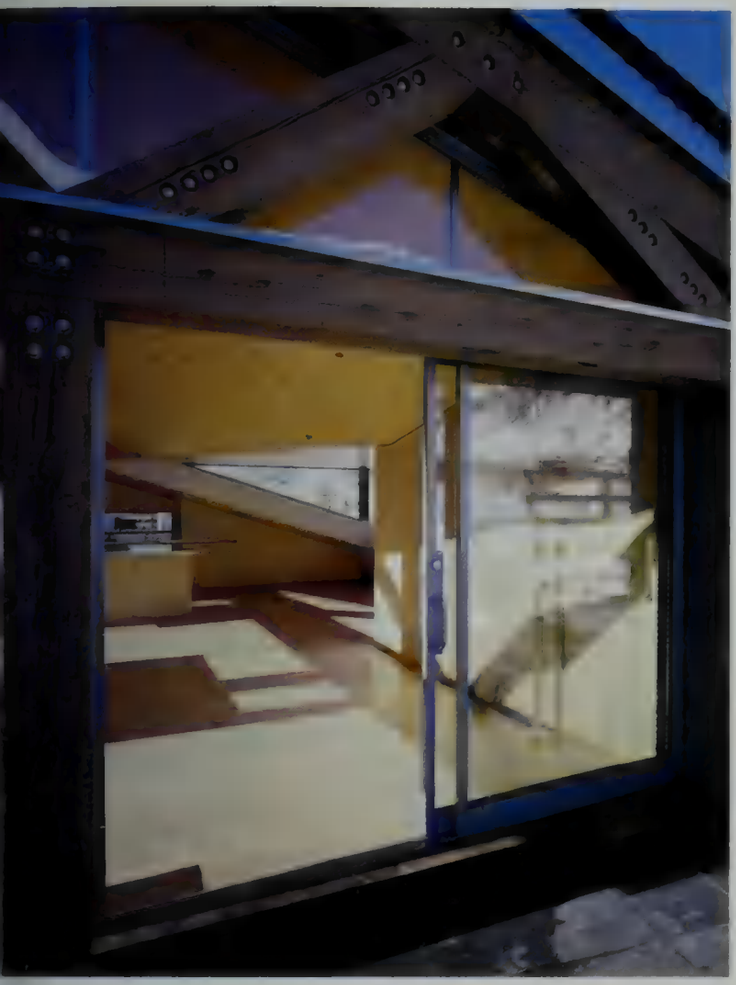


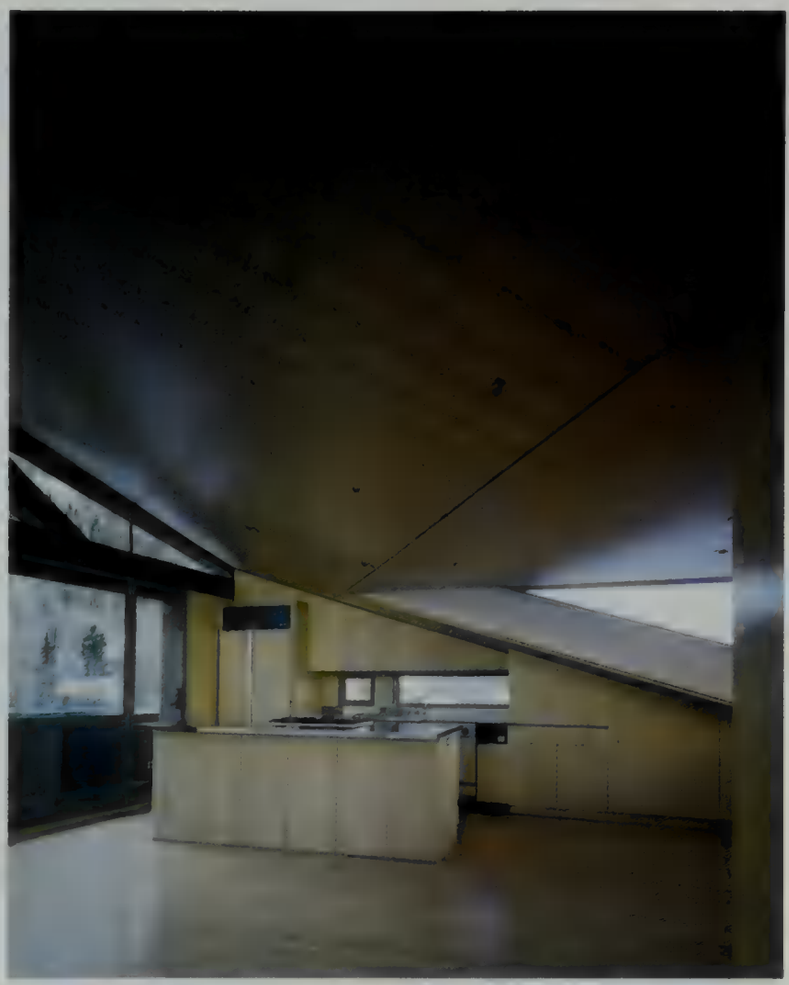
SECOND FLOOR

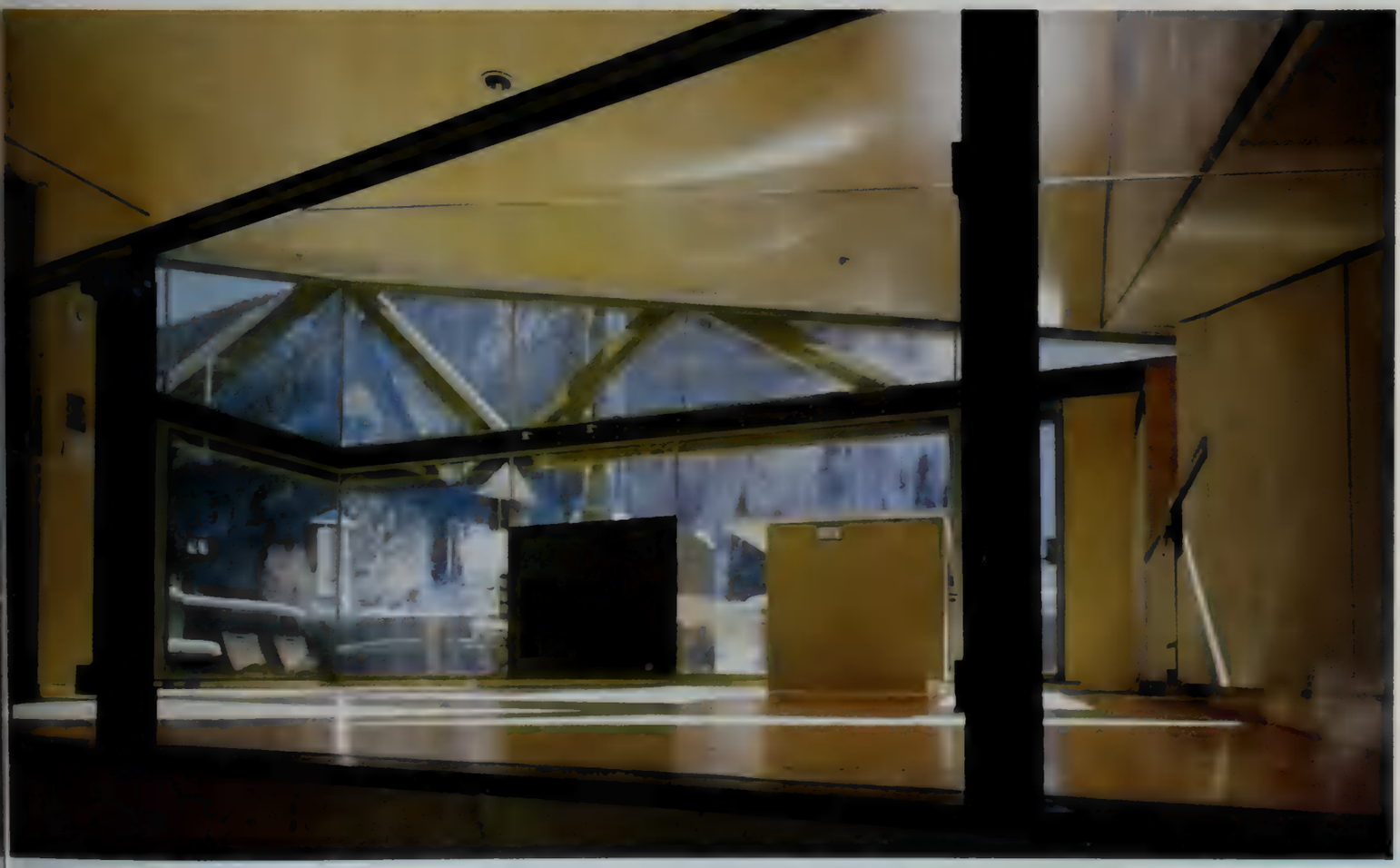
Ground-floor commercial space overlooks the town and mountains (far left). Entry halls to the apartments have custom-designed ski racks of stainless steel against galvanized sheet metal walls and metal grating on floors and stairs to minimize tracking of dirt and snow (near left). The overall structure of the building is wood and steel. Each apartment has its own amenities: the east unit has a double-height living room with a small balcony facing the slopes (plans left), while the west unit has a third-floor kitchen/living room with wrap-around terraces (opposite). Salvaged Douglas fir beams support the roof, and the space's complex geometry is clad in a patchwork of maple veneer panels.

Credits

Plunge Landing
Telluride, Colorado
Owners: *Ralph and Lee Kovel*
Architect: *Smith-Miller + Hawkinson Architects—Henry Smith-Miller, Laurie Hawkinson, principals-in-charge; Eric Cobb, project architect; Eugene Harris, Belen Moneo, Virginia Navid, Lawrence Ko, Greg Dupasquier, project team*
Project Supervisor: *Watts Design—Greg Watts, principal*
Engineers: *Nevjahr & Gorman (structural); Mark Eatherton (mechanical)*
Consultants: *Novasel Lighting Design—Gary Novasel, principal; Amy Vitale, project manager (lighting); Nevasca Development Corp. (project managers)*
General Contractor: *Wodehouse Builders*







Big Operator

Federal Reserve Bank of New York
East Rutherford Operations Center
East Rutherford, New Jersey
Haines Lundberg Waehler, Architects



25,00 square feet and floors over three acres in area, the Federal
erve Bank's new operations center in East Rutherford, New
ey, is big. It contains the latest technology for security and opera-
s, including the bank's first fully automated cash-handling system.
e tractor-trailer trucks enter and leave constantly through a
al in the front facade (left side of center photo, right). They haul
y bundled loads. But, far from routine freight, these loads are
ifeblood of our economy and the stuff of many people's hopes,
ations, and dreams.

ks carrying checks use a ramp (bottom photo) to load and unload
ie second floor. Other trucks enter and leave an open space
nd the ramps that HLW principal Theodore Hammer refers to as
'cash courtyard," loading and unloading inside sealed docks.
it ramp was one of our better inspirations," says Hammer. The
eral Reserve would have preferred check and cash facilities on
loor for ease of access, but the site was not large enough. Notes
er manager John Eighmy: "With the ramp and a two-story cash
(plan following page) where money can be transferred at either
, the architects accomplished the same result." Access is possible
th floors.

operations center's purpose, in part, is to reconcile amounts on
ks brought in from various sources, weeding out errors and
ns, and ship the checks back out again. Speed is of the essence.
facility runs round-the-clock and the plan of the basic operations
s is virtually a diagram of work flow. In the case of cash, this
is high-speed sorting, storage of reserves, and—read it and
)—destruction of bills that are tired and old. All this high-volume,
paced turnaround means quick access to sources of fast trans-
ation, which is the reason this facility is located near the
section of major highways and, for checks, an airport.

s have changed in the 80 or so years since the New York City
ral Reserve headquarters was built to resemble an Italian
e: safe and secure—above reproach and, to the sidewalk observ-
ove processing checks and cash. Inside, armed guards used to
t each cart laden with cash and checks as it went through hand-
ng and record-keeping. By contrast, in the new center, cash is
led by computer-guided robotic carts. The center also houses a
processing contingency center designed to assume all automated
d keeping and to guide transactions in the event of system
e in other locations. This role means lots of power backup
ding a complete diesel-generator plant.

d to use every visual device I know," says Hammer about his
n the building's unusual appearance. The design goal was to fit
could have been a massive windowless box into primarily a
-scale residential area. "It had to be a good neighbor, if not a
ming one," he explains. It also had to fit the Federal Reserve's
e to express solid character and security. The design response
ed with the angled planes of the front facade to the south, which
ent its bulk while still tying it together into one composition.
apparent reduction of scale is enhanced by cladding the planes in
naterials: metal and precast-concrete panels. The concrete, at a
nce, appears convincingly like granite. The rest of the building is
straightforward—especially to the east facing a highway. To the
lie single-family houses. Here the building steps back to retain a
park left over from a light-manufacturing facililty once on the
'We hardly touched a tree," Hammer says proudly.
les K. Hoyt

© Peter Paige photos



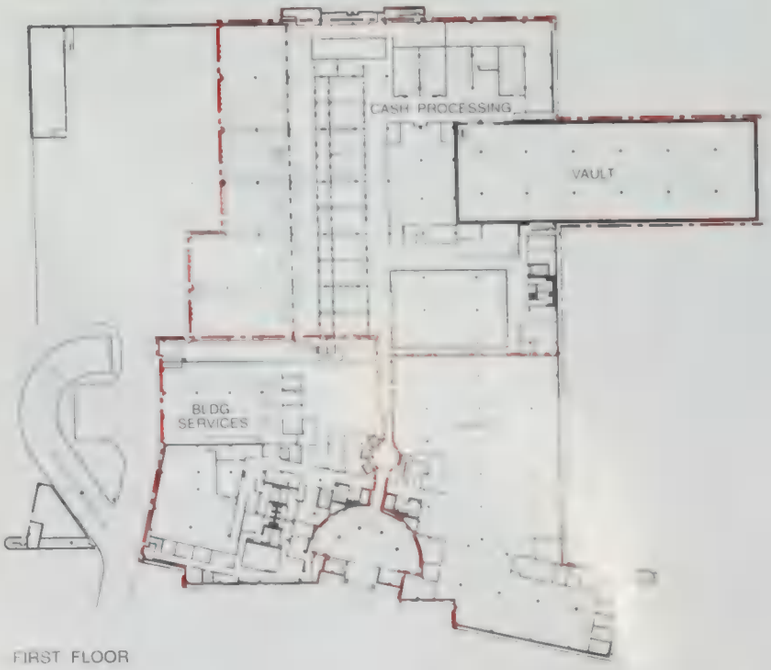




The architects made the most of those windows that don't reveal inside operations. Their large size brings daylight deep into the building through the lobby (top) and cafeteria .





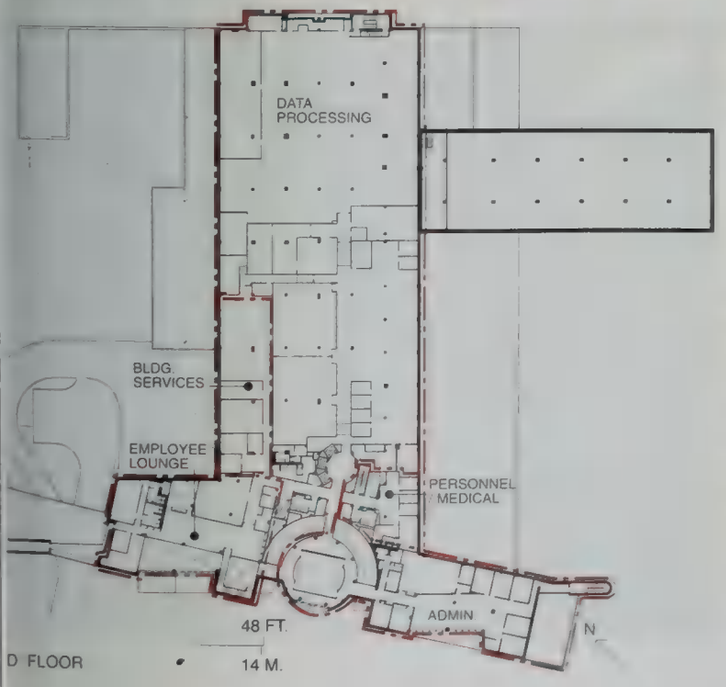


FIRST FLOOR



SECOND FLOOR





Up Close

Staying flexible. Because of a heavy reliance on technology in its operations, this building is "unbelievably complex," says HLW principal Ted Hammer. Still, he is able to quote the architect's favorite line: "On time and on budget." Costs were $80 million for basic design and construction, or less than $200 per square foot. But he does not claim all the credit. The client representative, Federal Reserve executive vice president Suzanne Cutler, even though this was her first construction experience, "had an uncanny sense for negotiation during bidding and construction." The timing of contracts also helped. This was a competitive time. "The center was the biggest project in New Jersey in many years," recalls Hammer. Most to the point, however, was the "collegial relationship the architects had built up on previous projects with construction managers, Torcon, Inc. This company was not brought in as early as HLW would have liked, but, when it was, it assured more manageable bid packages by successfully separating the primary contract into parts despite the building's complexity.

One big challenge the architects and CM had to overcome was the client's need to expand the facility during construction. The program had anticipated expansion, but "we just didn't expect it so soon," explains Hammer. Down came the concrete panels on the east facade, outward went the steel-frame construction, and back up went the panels. "Well, that's what they were designed to do," he says. Another major anticipated change is a growing volume of cash and shrinking volume of checks that the facility will handle. This means walls may well move again—not only outward, but inside as well.

The front part of the building is angled to parallel the access street, while the rest of the building aligns with the surrounding street grid. Heavy mechanical and electrical requirements are fed by a thin structure that projects above and to either side of the offices and employee facilities, and that seems from the exterior to slice diagonally through that part of the building. Employee facilities are bright and cheerful and include a large cafeteria with a variety of seating options (above), a health club, and several lounges. The Federal Reserve uses this "full-service environment," as center director John Eighmey calls it, to compete with other high-tech employers in the area. Competition can be difficult. "Our people have demanding jobs," notes bank executive vice president Suzanne Cutler. They also work under pressure and at odd hours. Another concern for employees is seen in the architects' attention to acoustic isolation between the cash-handling area and the rest of the building. The cash facility may appear to be a silent, peopleless world (photos overleaf), but in reality it is very noisy.







itors to these facilities in ration would see more cash n in their wildest dreams— ked to the ceiling in the vault posite) or carried by rolling ots to processing stations.

dits

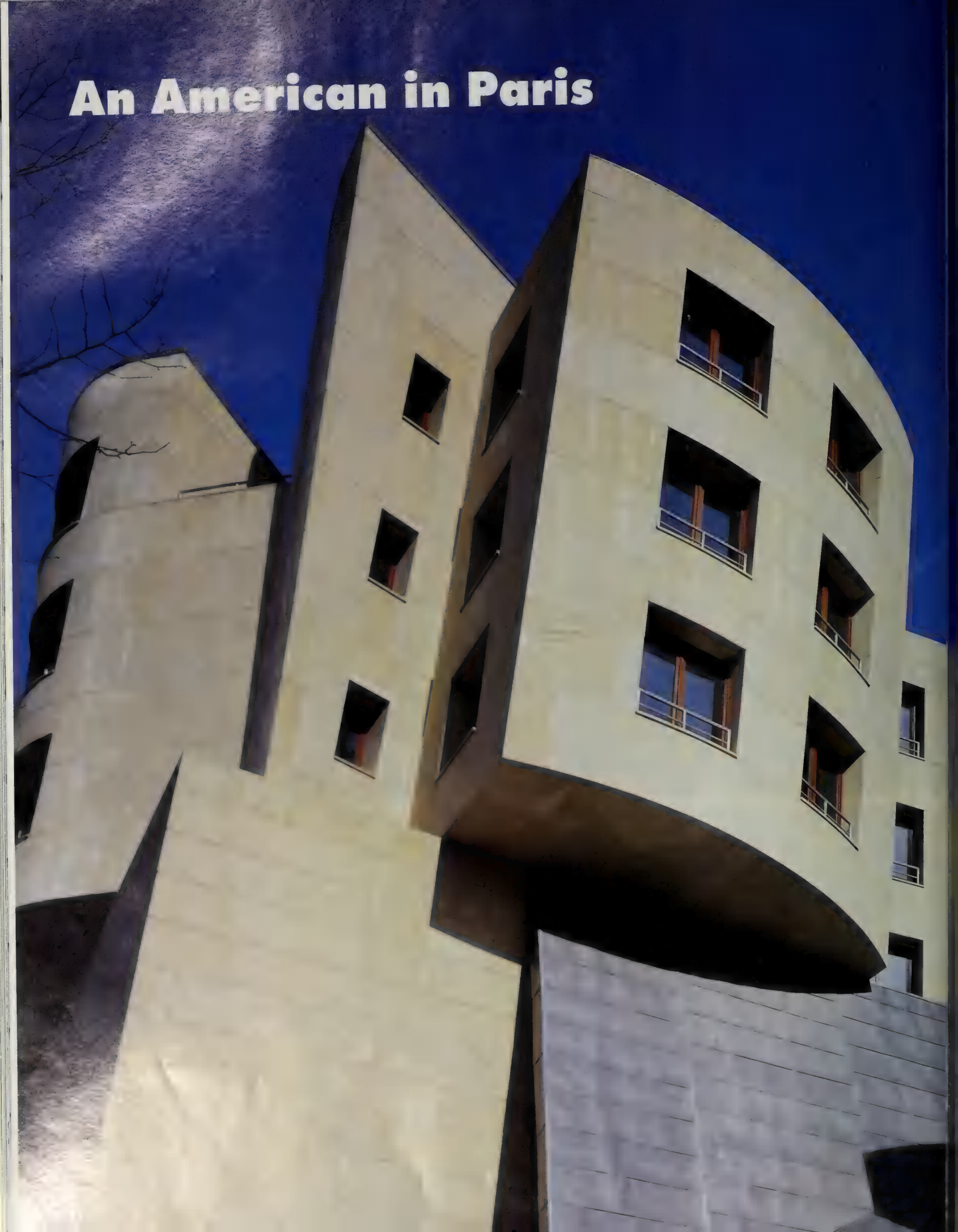
eral Reserve Bank of New c, East Rutherford rations Center t Rutherford, New Jersey

ner: *Federal Reserve Bank ew York*

hitects, Engineers, and rior Designers: *Haines dberg Waehler—Theodore mer, managing partner and designer; Jay Fleishman, ctor of design; Walter Zupancich, director of interior design; Emiliano Castro, senior interior designer; Karen Cumberpatch, interior designer; Said Zomorrodian, designer; Seymour Fish, Charles Lazarou, partners and project managers; Alan Kaplan, engineering partner; Thomas De Monse, project architect; John Steigerwald, project planner and programmer; Steven L. Viehl, chief mechanical engineer; Myron Schloss, chief electrical engineer; Dominic Cardinale, chief plumbing and fire-protection engineer; Jiann Tsai, electrical project engineer; William Jarema, structural senior project engineer; Lisa Lerner, fire protection project engineer; Randy Fleischmann, director of specifications and research; Donald Briggs, code administration; Michael Blauvelt, landscape and site engineer; Hank Kowalski, mechanical engineer*

Consultants: *Torcon, Inc., construction manager; Productivity Systems, Inc., storage and material handling; Giampietro Associates, Inc., food facility design; Harris & Walsh, Inc., security*

An American in Paris




rank Gehry gives a new home and
renewed image to the American
enter, which reopens next month.
American Center
Paris, France
Frank O. Gehry & Associates
Architect
Scubat & Jolibois Associate
Architect

The image of the American abroad has long been romanticized to represent freedom and individuality, and any American enclave in Paris bears the burden of these associations. During its 53-year occupation of 261 Boulevard Raspail, in the heart of post-War expatriate Paris on the Left Bank, the American Center did not disappoint. It was the place to hear American jazz, participate in "happenings," and watch experimental dance. Closed in 1987, the 1930s Neoclassical building by Welles Bosworth was razed to make room for the glass box-like Fondation Cartier by Jean Nouvel, which opened this month. Needing more space and a renewed image, the American Center moved across the Seine River to Bercy on the Right Bank. The Center commissioned Frank Gehry to create a physical place of exchange and to promote all aspects of American art.

The rebuilding of Bercy is part of the French government's plan to redevelop eastern Paris, a scheme that extends all the way to Gehry's other built project in France, the entertainment complex at Euro Disney in suburban Marne la Vallée. The new American Center is down the street from Paul Chemetov's massive Ministry of Finance and across the river from Dominique Perrault's equally grandiose Library of France. Next door, modern apartment buildings and hotels have replaced the old village atmosphere of wine wholesalers and worker housing that was once Bercy.

In a zone largely void of historic content Gehry found himself within Paris yet beyond its traditional fabric—an ideal location, perhaps, for an architect who considers himself an outsider, but who has a strong personal attachment to the city. Splicing together images of Paris, Gehry has recreated, in his words, "a sculptural sense of the city" within one building. An essential aspect is what Gehry calls "the cleavage of the Parisian skyline," where blank walls of buildings are exposed by the path of a road or, simply, a change in building height; roof planes are irregular and through gaps, courtyards and their inner activities are revealed. Gehry carved his center court behind the five very different faces of his 198,000-square-foot structure. Split on the diagonal, the building spills out towards a new city park. It is this opening out from the center that prevents the dense forms of French limestone from appearing forbidding.

The crucial cut through the building was a response to a city requirement that the southwest corner of the building be sliced off at 45 degrees to the park entry plaza. For the client, this became the lo main entrance; for Gehry, it presented the added challenge of tur the corner from a sober north facade to a more lively entrance. H solution is two-tiered. At street level, shop fronts and a cafe line t plaza, generating pedestrian traffic along the building's west faca Above, the mix of forms creates a lively rhythm that builds to a crescendo at the entrance. Slide open the central glass doors and events can spill out to the park; close them and two arm-like wing embrace visitors.

From the outside, the cityscape of forms expresses the diverse program, including 26 apartments for visiting artists and scholars 100-seat cinema, a 400-seat theater, galleries, visual arts studios, language school, and a restaurant. Inside, these varied parts and pieces spiral around the central atrium, which Gehry compares t town square. The sense of movement is reinforced by views acros the court from the glass-enclosed stair of the east wing, through lobby skylights, or from windows that frame views and visitors throughout the building.

Below ground, a double-height 2,500-square-foot black-box film/s recording studio rises up into the lobby to form the base of the m nine. Although added late in the design process, it has become a critical part of the building's program, representing the increase importance of film and video. It is also the center of what is one o most complex and tightly knit programs that Gehry has ever tac During the year and a half design process, the architect relied or own experience in designing art installations and on the input of artists in every discipline, particularly for the theater, his first fo dramatic arts.

The American Center aims to be a cultural bridge between Euro and America. Already its architecture is a key first step. Althoug cultural emissary of sorts from abroad, it is in no way an island. T interplay of forms—windows lifting out from the lounge and gall the zinc skirt floating above the entrance—contributes to an ove image of accessibility. Gehry has given a lesson in architectural e ity which seems to wink at its formidable *grands projets* neighb

Claire Downey



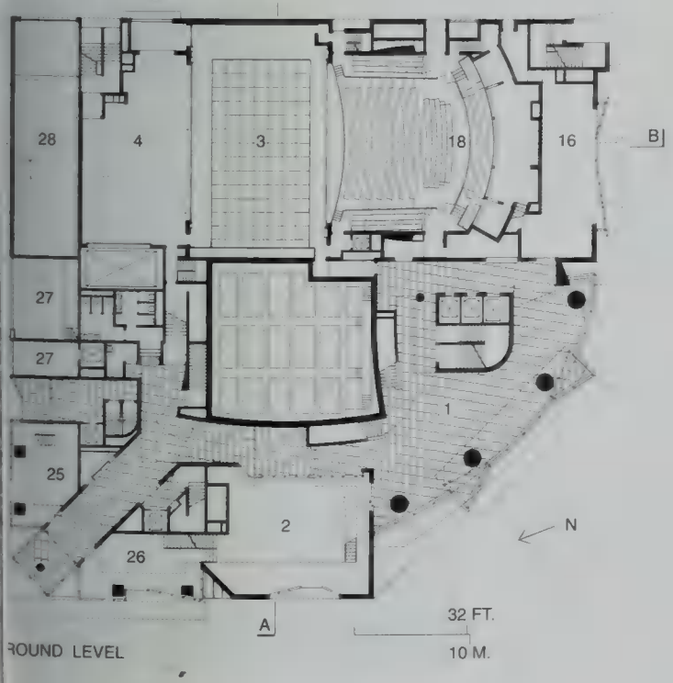
Like a compact city of dive cultural activities, the Am Center has many faces. Th sloping Mansard roof-insp planes of the street facade (trast with the playful form the penthouse apartments p site top) and, continuing southward, the curved zinc awning over the entrance (site bottom).



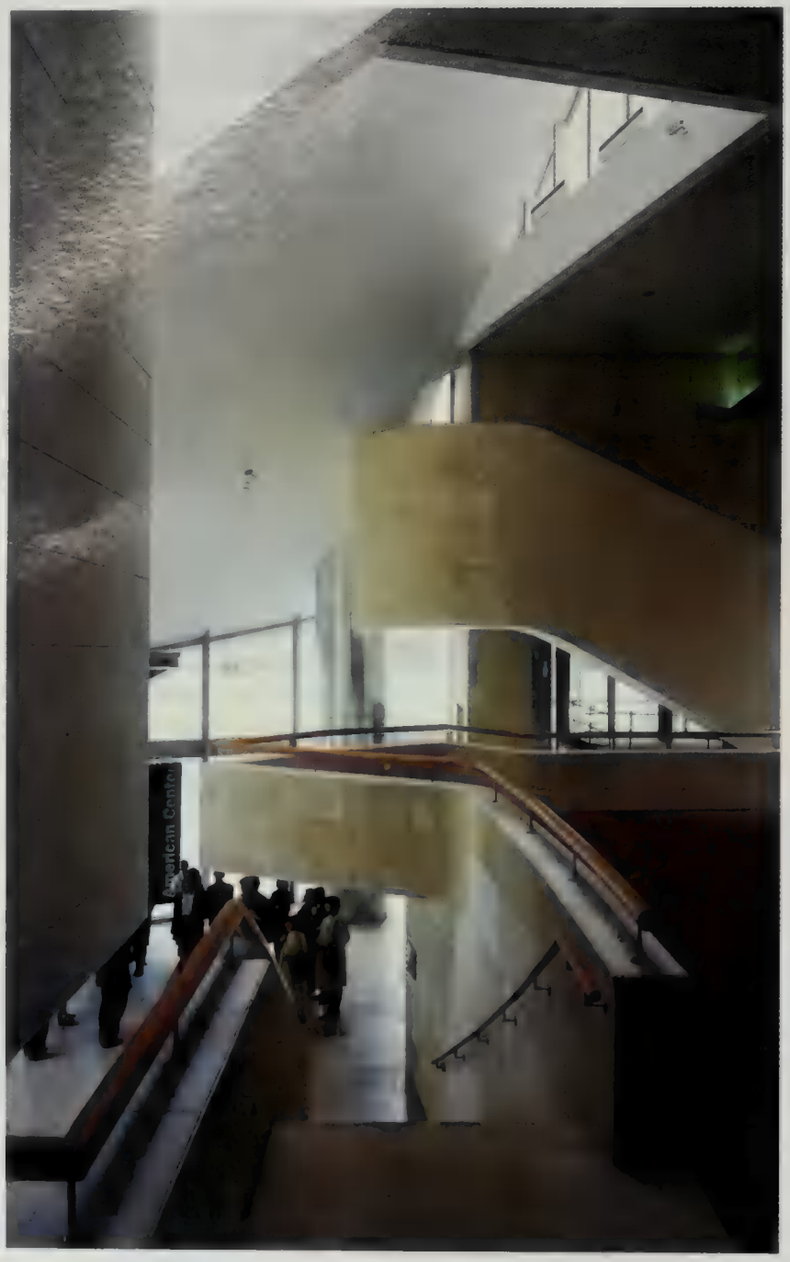
Up Close

Several buildings in one. Above the ground floor, the American Center splits into two sections. The western L-shaped wing contains apartments and the cinema, while the theater, the language school, a large gallery, a visual arts studio, and rehearsal rooms are layered vertically on the eastern edge. Two black box film/sound recording studios are located one level below ground. Fitting the dense program onto less than a 24,000-square-foot lot with 85-foot height restrictions and other set-back requirements forced Gehry to tightly control the building's borders. The more sedately urban facade (left), for example, gives few clues to interior functions. It's only from the truncated entry facade that articulated volumes come tumbling out. Externally, the massing of the building relates more to the overall image of Paris than its immediate surroundings, as the park and many of the nearby apartment buildings had yet to be designed in 1991 when ground was broken. Still to come is a pedestrian bridge linking the park to the Library of France, currently under construction across the Seine.

s below). On the ground floor, the main ny, restaurant, offices, a side entrance, ' the 11,170-square-foot theater with gen- us back-of-house areas are arranged und the protruding volume of the large k box studio (plan below).



1. *Lobby*
2. *Restaurant*
3. *Stage*
4. *Backstage*
5. *Large black box*
6. *Exhibition room*
7. *Apartment*
8. *Projection room*
9. *Kitchen*
10. *Mechanical*
11. *Storage*
12. *Parking*
13. *Costumes/ dressing room*
14. *Office*
15. *Foyer*
16. *Travel agency*
17. *Language school*
18. *Theater*
19. *Orchestra*
20. *Small black box*
21. *Theater workshop*
22. *Dance studio*
23. *Visual arts studio*
24. *Apartment lobby*
25. *Bookstore*
26. *Shop*
27. *Loading*
28. *Ramp*



The interior spaces are connected by a central atrium or "urban street" clad in the same French limestone as the exterior. Gehry has created a series of balconies, stairways, and framed openings, placing everyone on stage. "From the moment you enter," says Gehry, "you see the activity of the building." Overlooking Paris is a lobby bar adjacent to the theater, with Gehry's sloping version of the bay window (below).

Credits

American Center
Paris, France

Architect: *Frank O. Gehry & Associates—Frank Gehry, principal-in-charge/design; Robert G. Hale, James M. Glymph, principals-in-charge/management; Edwin Chan, C. Gregory Walsh, project designers; Marc Salette, Thomas J. Hoos, project architects; Brian Yoo, David Gastrau, David Pakshong, Kevin Daly, Tina Chee, project team*

Associate Architect: *Saubot & Julien—Roger Saubot, principal-in-charge; Jean Rouit, project manager; Philippe Cieren, project architect; Nicolas Camilleri, Antoine Maroun, Pierre Tanguy, Pierre Cam, Jean-Marie Thévenot*

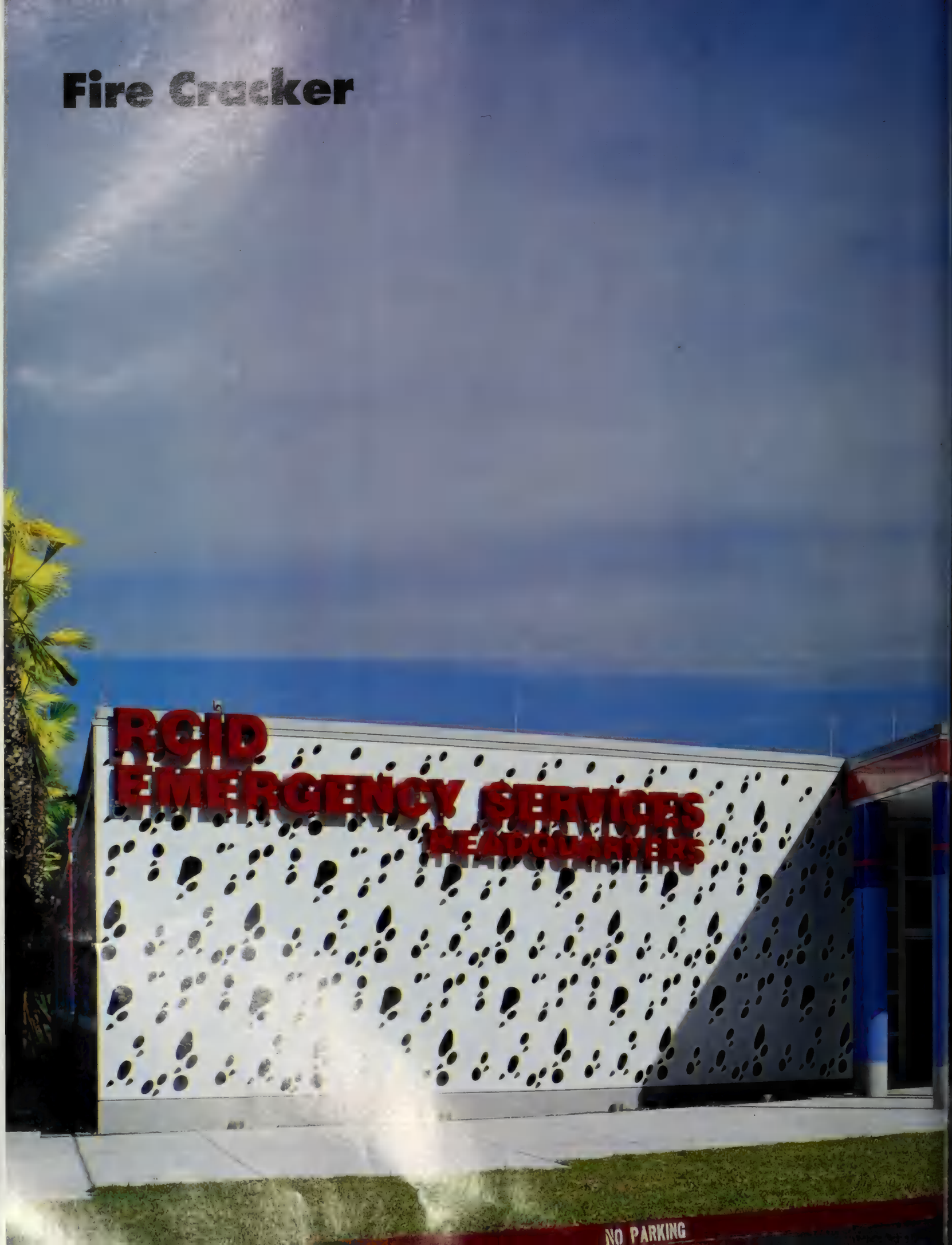
Consultants: *Xu Acoustique—Albert Yaying Xu (acoustics); Rioualec Scénographie—Michel Rioualec (theater)*







Fire Cracker



nturi, Scott Brown's first Disney-onsored project uses visual zardry to cloak a high-tech nergency services center.

Reedy Creek Emergency Services Headquarters
Orlando, Florida
Venturi, Scott Brown and Associates, Design Architect
Schenkelshultz, Associate Architect



The idea behind the Reedy Creek Improvement District Emergency Services Center was to make it look like an old-fashioned fire station that a child might have drawn with a box of crayons. This resulting witty design is the first Disney-sponsored project completed by Venturi, Scott Brown and Associates. "We saw it as an opportunity to use big-scale patterns that are traditional images, but exaggerated. It fits our philosophy about signs and big graphics," explains project architect Timothy Kearney.

The apparatus shed, where fire engines are housed, is clad in what appear to be oversized red bricks. One wall is dappled with dalmatian spots. A large and leaky fire hydrant sits out front; it's actually a fountain. In this building the medium and the message thoroughly intertwine and nothing is actually what it seems. The "bricks" and the dalmatian-dappled wall are porcelain panels. Adding to the surreal effect, there's no symmetry; everything is 16 inches off center. The contractor, initially unaware of the Venturi firm's penchant, as Kearney puts it, "of not putting anything in the middle," actually evened out one facade and had to rebuild it.

The building is really a 22,500-square-foot state-of-technology emergency services center. But Robert Venturi and Denise Scott Brown wanted to signal a turn-of-the-century fire house in a small town, and needed to do so in a one-story structure located on a five-acre site. Disney's domain in Orlando sprawls over 30,000 acres that now include the Magic Kingdom, Epcot, Disney MGM Studios, Pleasure Island, Typhoon Lagoon, and more. Officially, it is under the auspices of the Reedy Creek Improvement District, a self-governing entity established by an act of the Florida Legislature in 1967, when Walt Disney first conceived the Magic Kingdom.

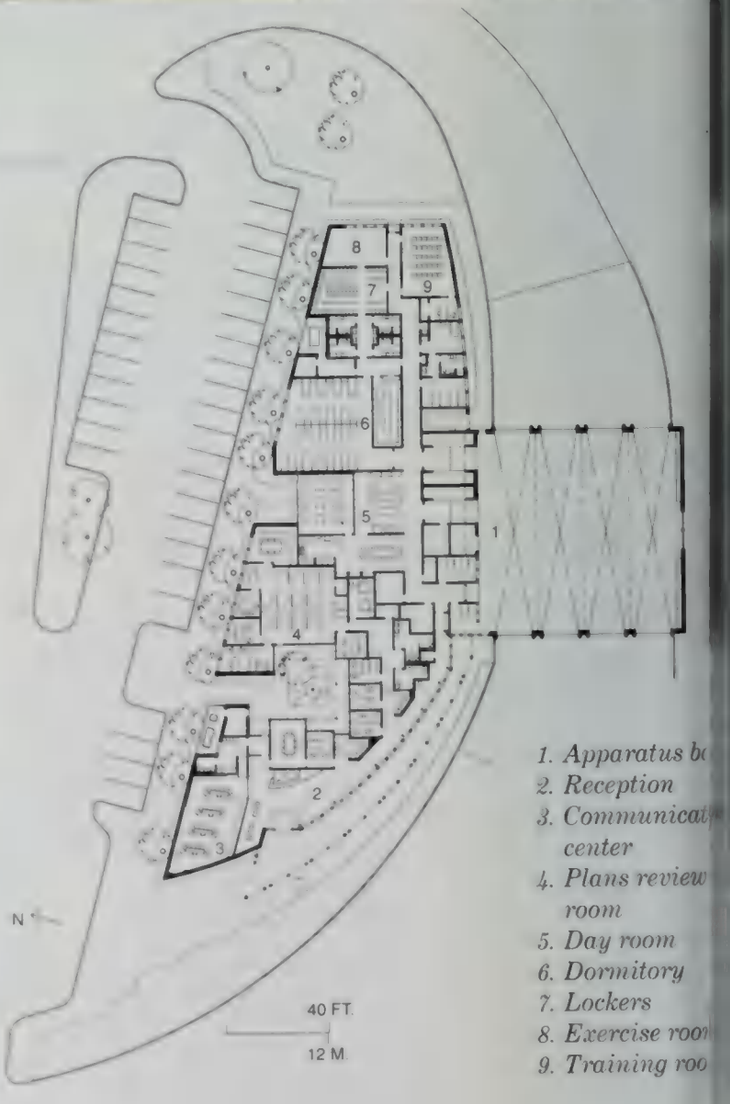
The fire house occupies a prominent site on the road into the Magic Kingdom, so Venturi and Scott Brown were asked to design a building that would convey its place and use, serving as a signpost on the road—an assignment suited to the architect's typically wry transformation of the vernacular. The equipment shed is just that, a shed decorated with a batten-seam aluminum roof and huge glass overhead doors, and punctuated by yellow bollards and pink trim. The main building follows a curve, and its entrance is an arcade marked by blue and pink-painted steel columns. (The curve accommodates the wider turning radius of fire trucks.) The spots are a *double-entendre*, invoking Disney's animated film "101 Dalmatians" and the traditional fire station mascot. At Disney, scale is always manipulated and perspective forced for visual effect, and this building is no exception: some spots are the size of a dog. While the overall design is replete with tongue-in-cheek references to fire-station imagery, one longstanding symbol was omitted for insurance and safety reasons: there is no fire pole. *Beth Dunlop*



©Peter Aaron/Esto photos



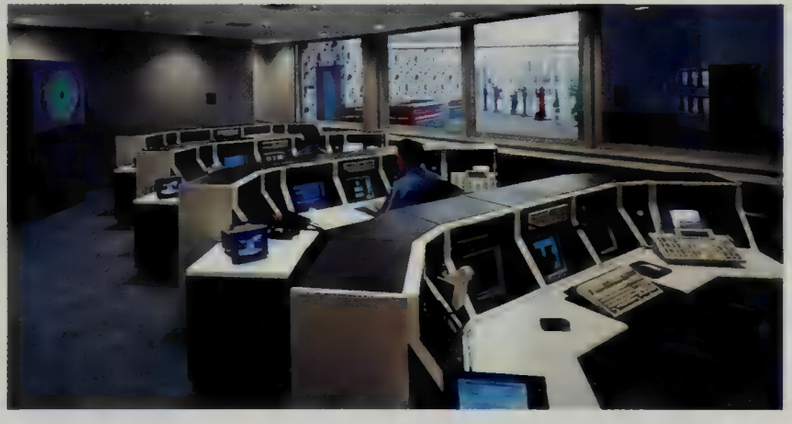




1. *Apparatus b*
2. *Reception*
3. *Communicat center*
4. *Plans review room*
5. *Day room*
6. *Dormitory*
7. *Lockers*
8. *Exercise roo*
9. *Training roo*







fire house had to be both a -tech emergency services er and a roadside attraction isitors to nearby Walt ney World. The equipment is clad in porcelain panels screened to look like giant cs. A seamed metal roof is nt to evoke small-town fire es. A flame-resistant roof brane was used to fireproof xterior lest a stray fire- ker from Epcot's nightly extravaganza damage the structure. The architectural motifs continue inside, where walls are painted with dalmatian spots and fire hydrants and valves line the corridor for sculptural effect. The building houses the central communications for all of Disney World's emergency calls, and accommodates three shifts of firefighters.

Credits
Reedy Creek Emergency Services Headquarters
Orlando, Florida
Owner: *Reedy Creek Improvement District*
Design Architect: *Venturi, Scott Brown and Associates—Robert Venturi, principal-in-charge; Timothy Kearney, project architect; Steven Izenour, Eva Lew, Amy Noble, team*
Associate Architect: *Schenkelshultz—J. Thomas Chandler, principal-in-charge; Dan Fields, Gary Krueger, project managers*
Engineers: *Braga Burton Braswell & Associates (structural); Overstreet Consultants (mechanical); Dyer, Riddle, Mills & Precourt (civil)*
Consultant: *Canin Associates (landscape)*
General Contractor: *Suitt Construction Company*

How Reform Is Shaping Up

With the topic of reform as the backdrop to nearly every discussion of healthcare today, architects are wondering how changes in the delivery and payment systems will affect the design of hospitals, outpatient clinics, and other medical facilities. What is clear is that change has already begun. Small independent hospitals without the resources to upgrade their facilities and adapt to a more competitive environment are either going out of business or are merging with more successful healthcare providers. As a result, large networks of community and regional facilities are emerging as the dominant forces in the industry, using their size and sophisticated management expertise to contain skyrocketing costs, reduce redundancy, and offer a broad spectrum of services from regular health examinations to specialized cancer care and sometimes even long-term elderly care.

While other building sectors were hard hit by the post-1987 recession and many remain at depressed levels of activity, healthcare has stayed strong, largely due to changes in insurance companies' reimbursement policies in the early '80s that promoted increased competition among healthcare providers. According to recent figures from the U.S. Department of Commerce, private non-residential healthcare construction spending is expected to rise at an annual rate of five percent over the next five years. Data from F.W. Dodge are less bullish, predicting a slight decrease in the contract value of healthcare construction, from $10.2 billion in 1993 to $10.1 this year and then an increase to $10.4 billion in 1995. Although the immediate picture is in doubt due to the uncertainties about pending legislation, the Commerce Department expects healthcare to be the fastest growing area of private non-residential construction, increasing from $9 billion in 1993 to $11.3 billion in 1998. About 70 percent of this money is expected to go for adding to or modernizing existing facilities and 30 percent for new facilities.

A national survey of 249 hospital executives last summer by the Tribrook Group, a consulting firm in Westmont, Illinois, agrees, indicating that 58.6 percent had plans for expansion or renovation, with 27 percent revealing plans for new or off-site facilities. Tribrook's president David Rich says this data means that hospitals are not afraid of the future and are forging ahead with plans for new facilities and ways to deliver healthcare.

If passed, the Clinton Administration's national healthcare reform proposals or some other kind of universal-insurance plan will strengthen these trends by adding 40 million previously uninsured Americans to the market of paying consumers and by fostering alliances of healthcare providers. As large health maintenance organizations (HMOs), insurance companies, and regional networks of hospitals compete for these new customers and fight to retain their existing ones, they will use architectural design as an important marketing tool, says Leland Kaiser, a healthcare consultant and associate professor in health administration at the University of Colorado in Denver. Calling the 1990s the "decade of design" in healthcare, Kaiser says that patients who have a choice between more than one provider will select the most attractive, easy-to-use facilities.

The shape of things to come

In addition to debating whether healthcare coverage should be universal for all Americans, Congress and the President will have to decide exactly what kinds of services to cover. These decisions will directly affect the kinds of facilities to be built. For example, depending on the shape of the final bill, healthcare providers may find themselves building new psychiatric, dental, or other specialty-care facilities.

"Reform will happen with or without the Clinton plan," asserts Nels Berg, senior vice president of construction and facilities for Mt. Sinai Medical Center in New York. "The government may affect the rate of growth, but what is driving it are the large business groups," says Berg, referring to the corporations who buy vast sums of healthcare for their employees. "As a result, hospitals are affiliating with one another now to make sure that they survive."

Proposed cuts in Medicare reimbursements will affect hospitals financially, particularly public and teaching hospitals in inner cities, which will have to provide emergency and prenatal care for illegal aliens not covered under the Clinton plan. And, as has been the trend in the past 10 years, hospitals will be pressured to keep patients out, rather than in. This shift will redirect their focus toward primary care and keeping people healthy rather than only treating them once they get

Sara O. Marberry is the editor of Aesclepius, *the quarterly newsletter of The National Symposium on Healthcare Design.*



The MacNeal Bridgeview Medical Center (right) outside of Chicago, designed by Stone Marraccini Patterson (SMP), is a good example of the latest healthcare facilities. Just 14,500 square feet, the building is a community-based clinic that emphasizes patient education and early diagnosis. This patient-focused approach can be seen in the center's light-filled reception and atrium on wing.

© Steve Hall/Hedrich-Blessing

lthough no one knows exactly what shape healthcare reform will ake, Sara Marberry examines possible ramifications on the planning nd design of healthcare facilities.

k. The good news for hospitals is that universal coverage would ow nearly everyone to pay for a broad range of hospital services. eform will result in the consolidation of organizations, not physical ities," says Mike Hemmes, editor of *Health Facility Management.* other words, as the big networks get bigger, the number of oviders may go down but the number of facilities may not. "Urban- al linkages of hospitals will require more building of small satellite ilities," explains Hemmes.

cilities get new roles

ese satellite facilities will serve a different role than the small hos- als of the past; instead of being general-purpose providers, they l serve as primary-care institutions rooted in their surrounding mmunities. Emphasizing health education, preventive care, and utine medical services, these satellite units will direct patients in ed of more specialized treatment to their affiliated regional hospi- s. By differentiating the roles of community and regional facilities, ge healthcare providers will be able to eliminate some duplication expensive medical equipment.

etworks will oversee the development of regional primary care, ated in new ambulatory-care centers, outpatient surgery centers, l medical office buildings," explains futurist Russ Coile, president he Health Forecasting Group in Santa Clarita, California, in *New radigm in Healthcare: Selected Presentations from the First Five mposia on Healthcare Design*, to be published by Van Nostrand inhold in 1995. Acute care, on the other hand, will be provided at a work's central or "hub" hospital. One-stop shopping for services l be provided through this hub hospital and surrounding satellite ilities for primary care, rehabilitation, cancer, sub-acute care, tetrics, long-term care, AIDS, fitness, day care, and so forth.

e formation of hub hospitals, says Coile, is forcing the closing of ne smaller hospitals and causing a "rationalization of redundancy" ome services. Excess bed space in hospitals can be reallocated to g-term skilled-nursing care, rehabilitation units, new ambulatory- e programs, and hospital-based physicians' offices.

ther way networks contain costs is by emphasizing outpatient e at all their facilities. As they reduce the number of beds in expensive acute-care wings, hospitals are busy building outpatient pavilions that often include spacious, light-filled lobbies and act as friendly new faces to buildings that had in the past been dour and intimidating. Designed with the patient in mind, these new pavilions use design to mark the hospital's front door and direct visitors from reception area to admitting, examination, and treatment areas.

In the past, hospitals often were designed with only the needs of doctors, nurses, and support staff in mind. The results were hospitals laid out in a maze of departments and corridors, with visitors lost unless they asked for help at every corner. Not surprisingly, hospitals that are easy to navigate often require smaller staffs.

The environment as healer

Attractive public spaces and patient rooms are not just good marketing tools. As doctors learn more about the connection between patients' minds and bodies, they are realizing that a pleasant sun-filled environment can contribute to the healing process. "There is increasing recognition of the potential therapeutic value of the environment in which care is delivered," says Rob Matthew, a design associate at Kaplan McLaughlin Diaz Architects.

Although many hospitals today cannot fill their beds, they still may not be able to reduce the amount of square footage devoted to inpatient care. Because hospital beds are being used only for the most acute-care patients, rooms have to be larger to handle all the associated medical equipment. At the same time, hospitals are responding to patients' demand for more privacy by relying more on single-bed rooms. This trend is already evident at Kaiser Permanente/Northern California, which is planning for 80 percent private and 20 percent semi-private rooms in its three new hospitals.

The healthcare industry is complex and cannot be summarized in a handful of examples. Nonetheless, the four projects shown on the following pages highlight some of the most important trends in the field. From a large urban hospital transforming itself into a more user-friendly institution to a small satellite facility in rural Louisiana, from a new elderly care wing of a Canadian hospital to a new cancer center in Connecticut, these projects shed useful light on the future of healthcare. *Sara O. Marberry*



Growing competition in the healthcare field led the Sutter Health system and a local physicians group to develop the Sutter Santa Cruz Maternity & Surgery Center in California (left). Designed by Kaplan McLaughlin Diaz, the small hospital (50,000 square feet) marks a new generation of specialty-care satellite facilities that large healthcare providers are in the process of building.

Outpatient Services Addition

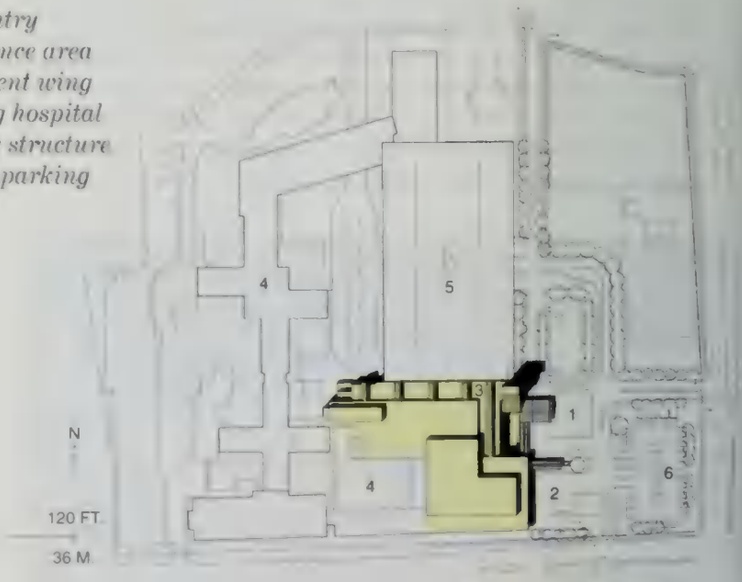
St. Luke's Medical Center
Milwaukee, Wisconsin
Bobrow/Thomas and Associates

In keeping with the general trend toward healthcare reform, St. Luke's Medical Center in Milwaukee realized several years ago it had to build a more community-oriented, public-friendly identity. At the same time, efforts to contain healthcare costs were forcing it to place greater emphasis on outpatient services and to become more market-sensitive. Over the years, the hospital had grown in fits and starts—adding new departments here and expanded facilities there. After several decades of such piecemeal growth, the hospital campus was a maze of buildings offering few clues to getting around. In fact, when architect Michael Bobrow would ask taxi drivers to take him to the hospital, they could drop him off at any one of six different

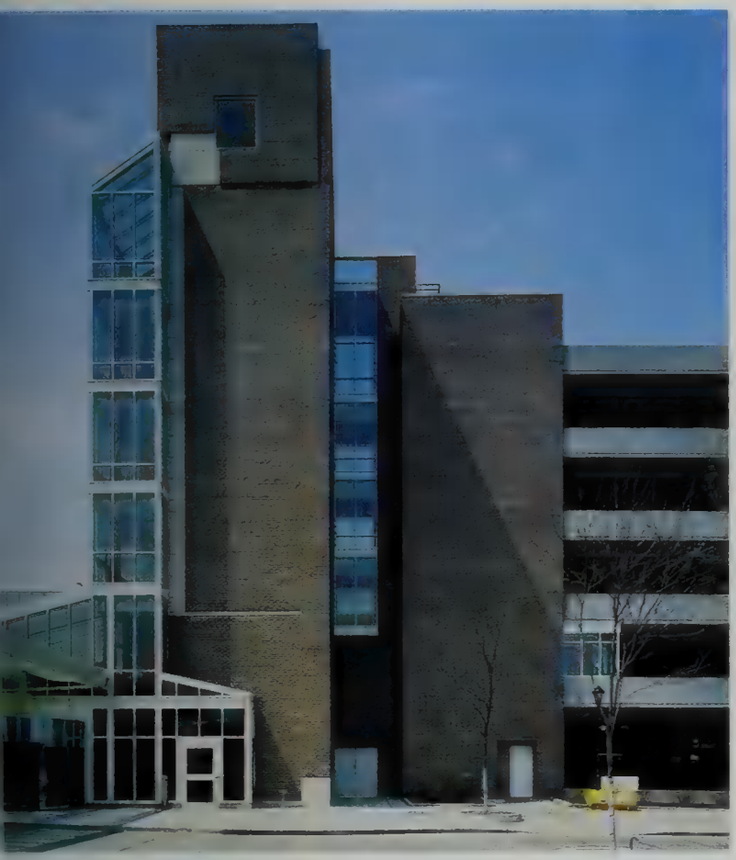
© Grant Mudford photos



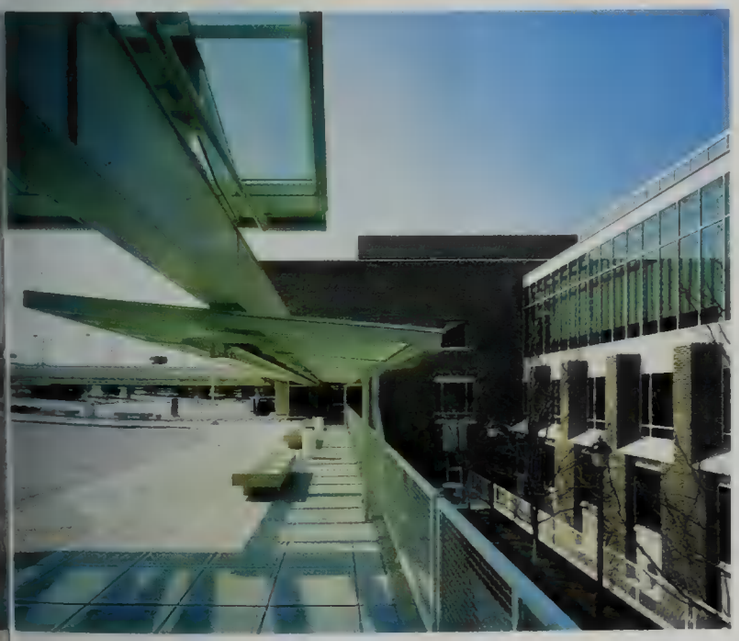
1. *Main entry*
2. *Ambulance area*
3. *Outpatient wing*
4. *Existing hospital*
5. *Parking structure*
6. *Surface parking*



rances. Hired to develop a sterplan for the hospital pus and then commissioned esign the new outpatient and rgency services wing, row's firm, Bobrow/Thomas Associates (BTA), brought er to the medical center by ng it a new public face and a rly identified circulation e. Creating an inviting, non-eatening character for St. Luke's was a driving force behind BTA's masterplan and its architectural design for the new outpatient wing. A 165,000-square-foot L-shaped building, the addition wraps around the existing hospital and connects to an existing parking structure. With a seven-story, glass-and-brick elevator tower that serves as a beacon at night, a large steel canopy, and a skylit lobby that faces a major intersection, the new building has established a higher public profile for St. Luke's. "We used the building to establish St. Luke's as the center of its community," explains Bobrow. Helping the hospital to reinvent itself as a patient-focused institution, BTA used daylight as an important tool in creating attractive spaces. The main lobby and the two-story-high galleria that forms the spine for the outpatient wing use combinations of large windows, clerestories, light wells, light monitors, and skylights to bring as much sunlight indoors as possible. At the same time, a variety of courtyards and landscaped outdoor spaces break with the traditional model of the hospital as a hermetically sealed, inwardly directed environment. Even







To give the hospital a higher public profile, the architects moved the main entrance (opposite) from a side street to a major intersection. The design of the new elevator tower (opposite and above left) refers to a clocktower at a 1930s school across the intersection. The brick specified for the hospital addition recalls that used on many older buildings in Milwaukee and is richer in tone than that used on other buildings at St. Luke's. A sunken courtyard (above right) brings light into the below-grade portions of the Vince Lombardi Cancer Clinic.

the cancer center, which is in part located below grade due to shielding requirements, receives a remarkable amount of sunlight thanks to a carefully inserted sunken courtyard. Today's reform-minded healthcare world strives for easy-to-navigate, attractive circulation spaces. The skylit galleria that BTA designed for St. Luke's is a good example of this trend, providing a clear east-west path from the front lobby to the various outpatient departments included in the new wing. Each of these departments (testing, radiology, and diagnostic and treatment) has its own reception and waiting areas just off the galleria and a clearly marked path leading from examination rooms to departments in the old hospital building. By placing generic exam rooms between each department, the architects provided for flexibility of use; if one department is busier than another on a particular day, it can borrow exam rooms from its neighboring department. Future growth can be accommodated simply by extending the galleria farther west and linking new departments to it. While the galleria occupies the north leg of the new building's "L," a new emergency department—including seven major treatment rooms and 15 minor treatment rooms—resides in the east leg. Separate wings for emergency and outpatient services ensures that one does not interfere with the other. The next phase in the hospital's master plan is a 16-story specialty care tower located north of the galleria. *Clifford A. Pearson*



The long expanse of the two-story-high galleria is broken up by generous skylights (above and opposite left). The skylights also help define the departments that feed off the galleria, giving the circulation spine the sense of being a series of rooms instead of just one long corridor. The top floor, where same-day surgery facilities are located, has its own reception area (above). By introducing sunlight from above and from the side, the architects made the reception area on the main floor (opposite right) an enticing space. A curving cherry wood wall serves as a visual landmark to help orient visitors (right).



dits
patient Services Addition
Luke's Medical Center
waukee, Wisconsin
ner: *St. Luke's Medical ter*
hitect: *Bobrow/Thomas and ociates—Michael Bobrow, gn principal; Julia Thomas, ning principal; Wayne back, project management cipal; Anthony Roesch, programming and medical planning principal; John Sealander, project architect; Malcolm Brown, senior designer; Brett Meyer, job captain; Joseph Rothman, director of construction administration; Carol Fishback, director of interior design; Ervin Schloemer, site representative; Arturo Santos, Ezekial Triana, Lillian Chang, Kevin Adams, Rey Turla, Percival Alger, Frank Yu, K.C. Huang, Hillary Jaye, Eduardo Lopez, Ron Miranda, Luis Noboa, Aida Stavugaard, Xavier Garcia, project team*
Engineers: *Schmidt, Garden & Erikson (mechanical/electrical and structural); Graef, Anhalt, Schloemer (civil)*
Consultants: *The Jacob Braun Company (landscape architecture); Saul Goldin (lighting); Devenish Associates (interior design); Mitchell International (medical equipment planning); Rolf Jensen & Associates (building code consultants); Pro-Spec Associates (specifications); Finish Hardware Specifiers (finish hardware)*
Construction Manager: *Oscar J. Boldt Construction*







FLOOR

1. *Lobby*
2. *Galleria*
3. *Emergency*
4. *Admitting*
5. *Test center*
6. *Radiology*
7. *Diagnostic and treatment*

MRI Center

Alexandria, Louisiana
Douglas Ashe and Associates and Lewis Brown & Associates

Demand by both the public and the medical establishment for advanced medical technology is forcing some healthcare providers in rural areas to form joint ventures with competitors to build expensive new facilities. Thus the two largest hospitals in central Louisiana pooled resources to build this Magnetic Resonance Imaging Center in Alexandria. By siting the 4,770-square-foot outpatient facility along a major street and giving it a formal linear plan, the architects created a building with a strong public identity. But by using pitched roofs and an intimate scale, they made it fit into a mostly residential neighborhood, explains project architect Douglas Ashe. To limit the amount of expensive shielding needed, the procedure room is



© Alan Karchmer photos

Located halfway between the two hospitals that own it, the MRI Center is a steel-frame, concrete-slab structure that cost $800,000 to build. Because steel interferes with magnetic resonance imaging, concrete block and wood-laminate arches were used for walls and roof in the procedure room. A long canopy leads to the main entry of the building (above), while a driveway on the southeast side of the building (not shown) provides access for ambulances. To create a calming, patient-friendly environment, the architects brought light and views into interiors with clerestories and windows that look onto a landscaped courtyard (opposite bottom left and right).

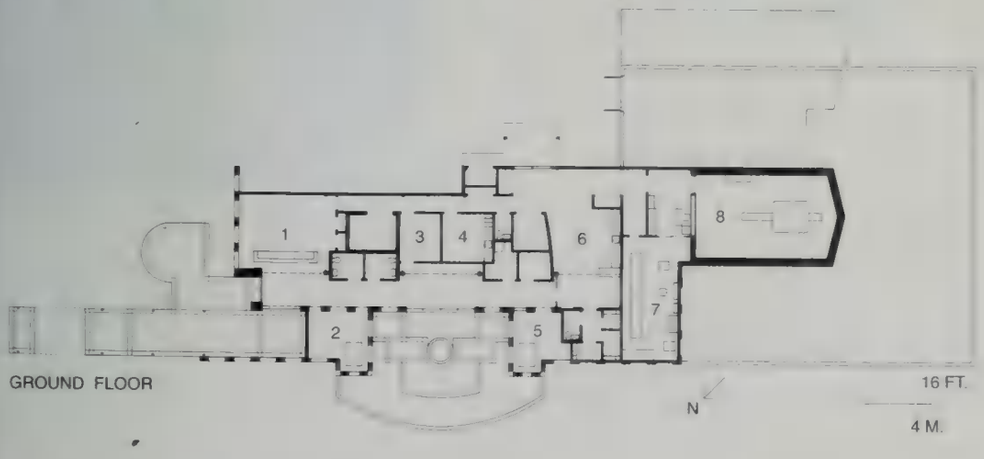
ocated at one end of the build-
ng. The procedure room was
esigned so it can share dressing
nd preparation rooms with a
econd procedure room in the
uture. By raising the roof above
he circulation spine and the
ain public areas, the architects
ere able to bring in sunlight
rom clerestory windows and
reate a soothing environment.
he main public areas also wrap
around a private courtyard on
the north side of the building,
providing ■ strong visual connec-
tion between indoors and out.
C.A.P.

Credits
M.R.I. Center
Alexandria, Louisiana
Owners: *Rapides Regional Medical Center and St. Frances Cabrini Hospital*
Architects: *Douglas Ashe and Associates and Lewis Brown & Associates—Douglas Ashe, project designer; Lewis Brown, architect for contract documents; Kevin Broussard, Rodney LeBlanc, project team*
Engineers: *LaBauve and Co. (structural); Purtle Associates (mechanical); E.E. Consultants (electrical); Pan American (site survey); Capozzoli Associates (geo-technical)*
Consultants: *Patrick Moore Landscape Architects (landscape design); Medical Systems (MRI)*
General Contractor: *Skip Converse, Inc.*









1. *Reception*
2. *Waiting*
3. *Office*
4. *Lounge*
5. *Conference*
6. *Preparation*
7. *Computer*
8. *Procedure*

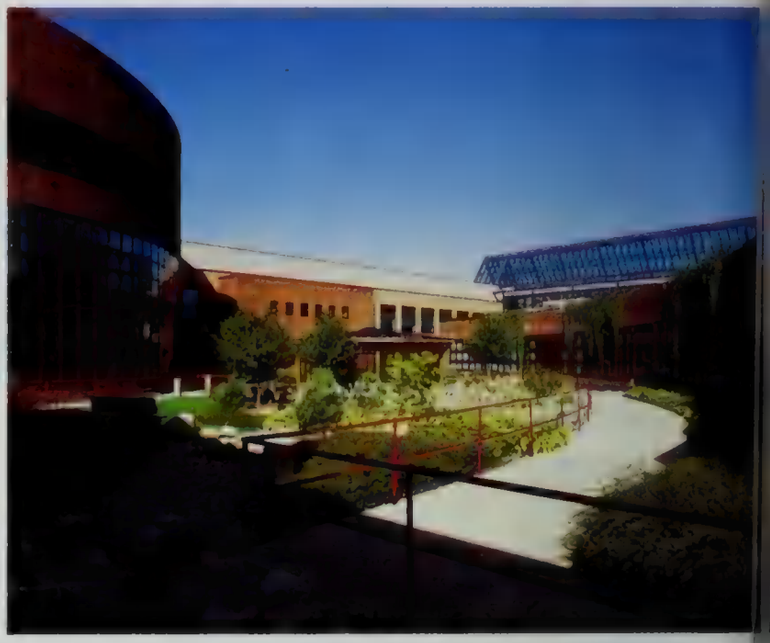
Extended-Care Facility

St. Thomas-Elgin General Hospital, St. Thomas, Ontario
NORR Partnership, Limited

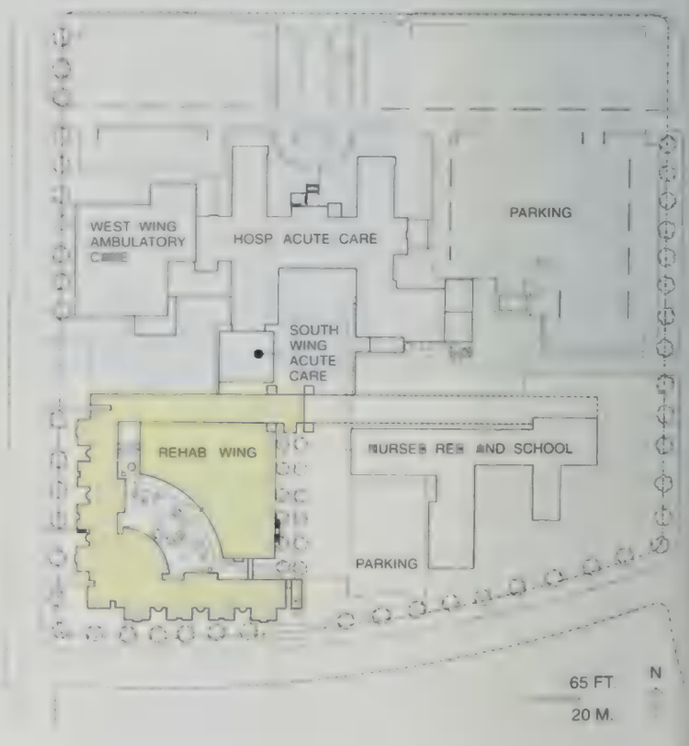
This 120-bed long-term-care addition follows several trends that Sara Marberry's (page 98) essay predicts will position traditional hospitals for the future. The new facility is the first of several pavilions planned for specialized treatment, for which basic acute care will only be one component. The architects also envision the entire complex as welcoming and an easy place for patients to orient themselves. A future building for outpatients will open to the atrium walkway through storefront entrances fo each department. Despite construction cost constraints, the architects brought a maximum psychologically healing sunlight indoors through generously glazed single-loaded corridors and many sunrooms. "The goal here is to promote self-reliance

© Steven Evans photos





To ease community concern about the new facility's intrusion on blocks of surrounding bungalows, the architects held the height of the concrete-frame structure to two stories and segmented the facade facing the street into small-scale units. Each projecting and recessed unit contains two bedrooms centered on a sun room used for relaxation and greeting family and guests. This makes for a welcome change from the conventional large central common room.



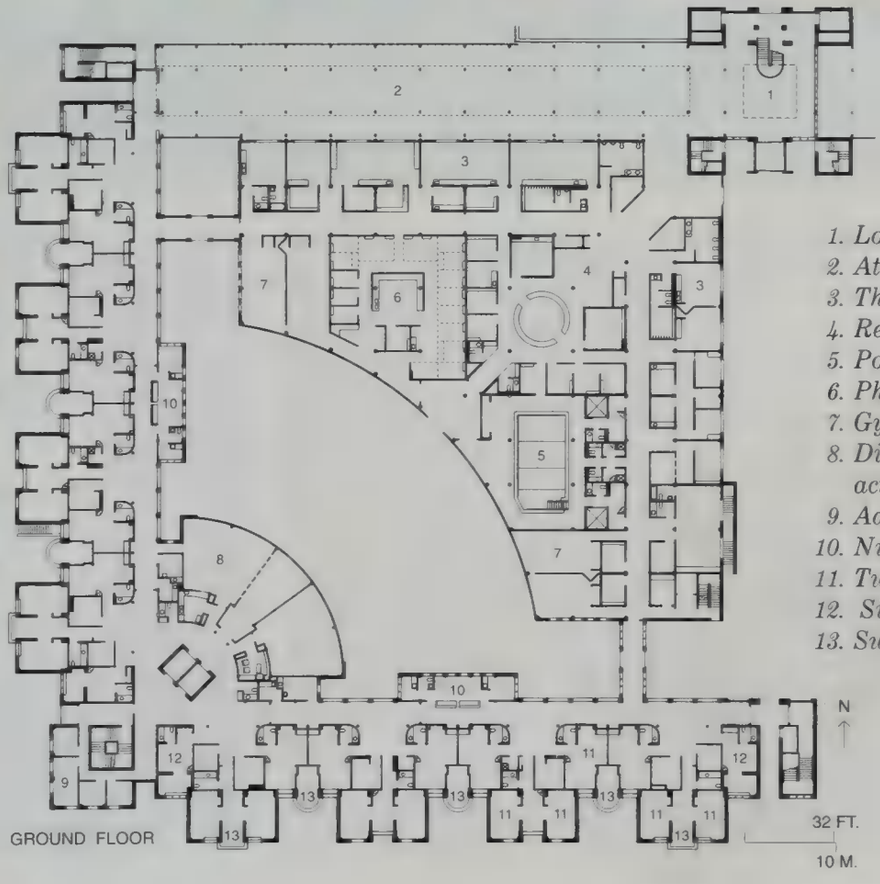
's NORR partner Skip
nwartz, pointing to hands-free
vators and flower beds the
re agile patients plant them-
ves. It is also to encourage a
urn to the community,
nough the average patient age
ver 85. One trend that Mar-
ry reported was not followed
his $20-million facility. Most
ient rooms are not singles,
doubles. "Private rooms are in demand in cities," notes Schwartz, "but in rural areas like this, multiple-bed rooms are most popular." *Charles K. Hoyt*

Credits
St. Thomas-Elgin Hospital
St. Thomas, Ontario
Owners: *The Board of Governors, St. Thomas-Elgin and Government of Ontario*
Architects: *NORR Partnership, Limited—Skip Schwartz, principal-in-charge; Patsy Poulin, project manager; Hugh Westren, contract administration; Forrest Grieson, chief specifier; Hugh Blatsutto, structural engineer*
Engineers: *Vanderwesten & Rutherford, Limited, mechanical and electrical*
General Contractor: *Ellis-Don Company, Limited*









1. *Lobby*
2. *Atrium walkway*
3. *Therapy*
4. *Reception*
5. *Pool*
6. *Physiotherapy*
7. *Gym*
8. *Dining and activities*
9. *Administration*
10. *Nurse*
11. *Two-bedroom*
12. *Single-bedroom*
13. *Sun room*

Cancer Center

Saint Francis Hospital and Medical Center
Hartford, Connecticut
TRO/The Ritchie Organization, Architect

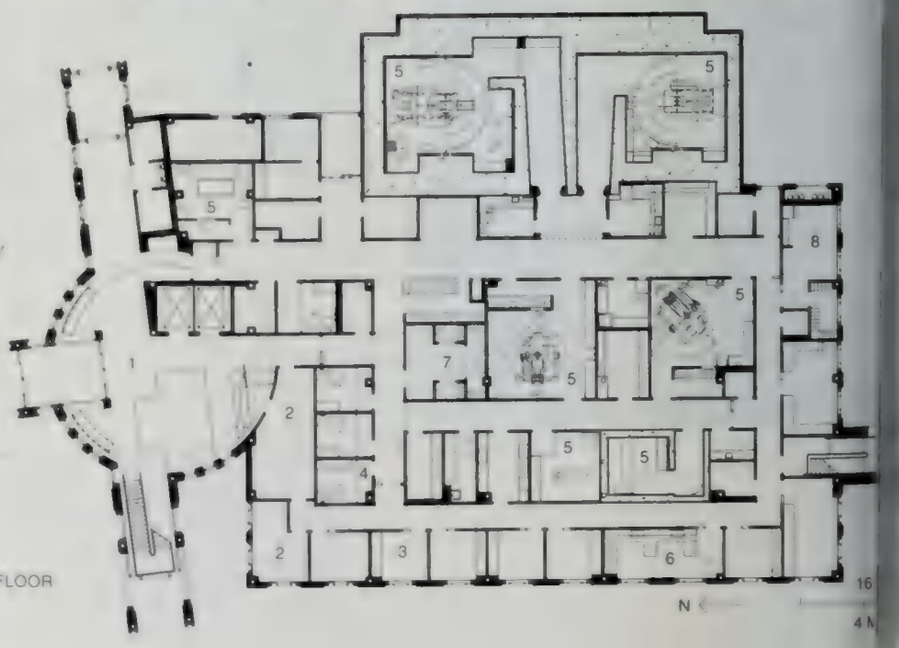
A good example of the trend toward creating separate facilities for high-profile departments, this 31,200-square-foot Cancer Center was designed as a free-standing building with its own identity. But as the first phase of an ongoing $132-million expansion program that will consolidate ambulatory services and replace outmoded inpatient services at this large hospital campus, the Cancer Center had eventually to link up with the existing hospital, an adjacent medical office building, and a patient-care tower now under construction. The first new building on a forecourt that brings order to the campus, the cancer unit helps create a new front door to the medical complex. Like most new healthcare facilities, this one primarily services

© Warren Jagger photos



Fenestration of the Cancer Center echoes that of the medical office building behind it (above), while its cable-suspended glass canopy helps give it identity. The strong axis defined by the two-story circulation spine ends with a three-story tower at the west (opposite, top left) and will eventually connect with the new building and the existing hospital on the east. "We didn't want to create the look of a hospital or a residential building," says Morgan of the Cancer Center's interiors (opposite). "What we wanted to do was design spaces with lots of sunlight that would be relaxing and uplifting."

1. *Lobby*
2. *Office*
3. *Physician*
4. *Exam*
5. *Treatment*
6. *Planning*
7. *Dressing*
8. *Staff lounge*

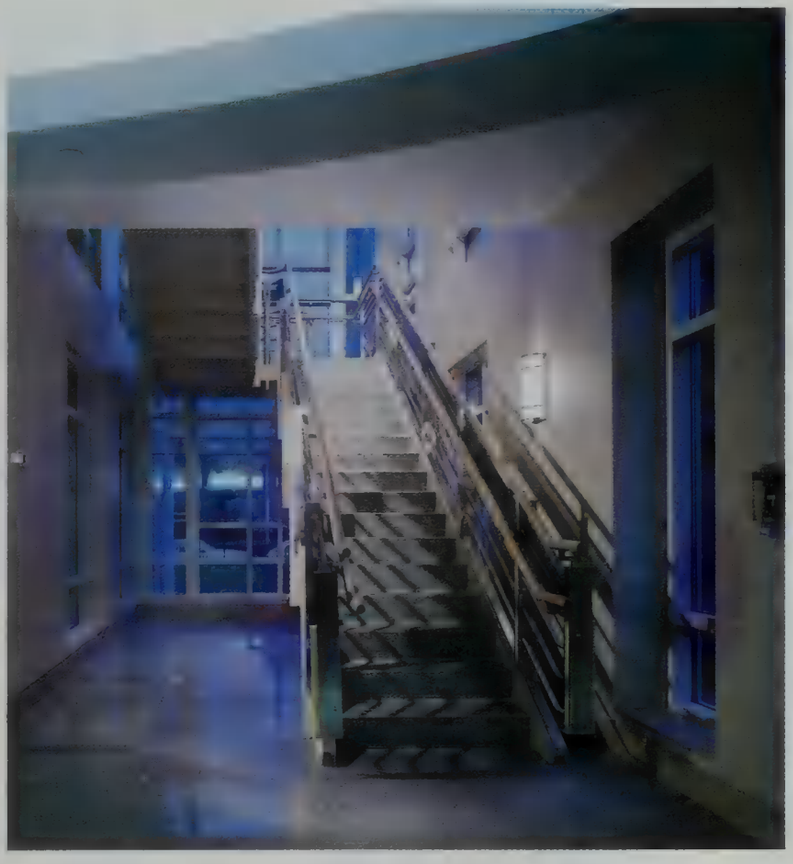


FIRST FLOOR

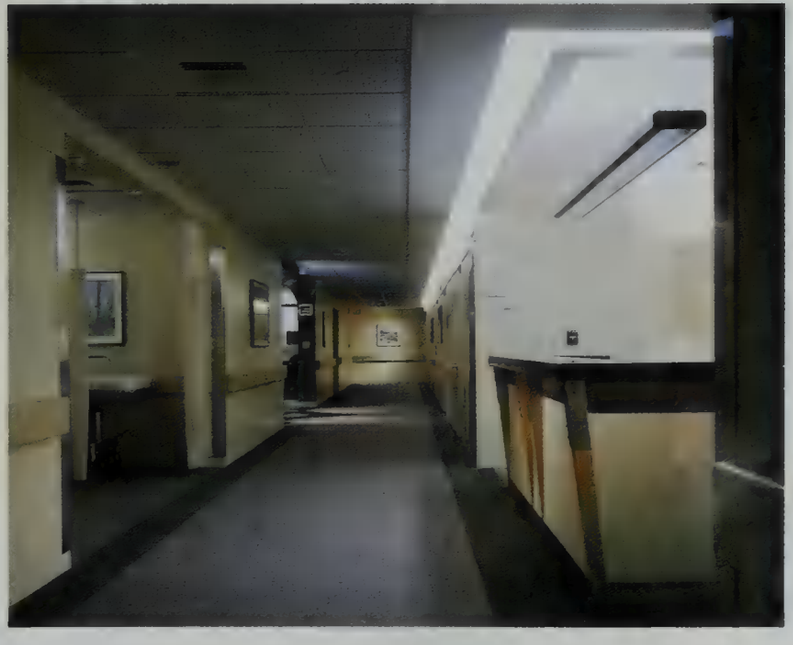
tpatients and realizes a
tient-focused approach with its
rge circular lobby and its
early defined circulation, says
endell Morgan, TRO president.
though Modern and clad in
ecast concrete, the Cancer
enter picks up the proportions
d character of the elevations of
closest neighbor—a handsome
nestone medical office building
mpleted in 1941. Rejecting the sterile clinical look of old cancer wards, the hospital felt that patients facing life-threatening illnesses would appreciate generously proportioned public spaces with large windows and plenty of sunlight. While TRO met all of the shielding requirements of the latest cancer technology, it didn't lose sight of the patient's need for a soothing environment. *C.A.P.*

Credits
Cancer Center
Hartford, Connecticut
Owner: *Saint Francis Hospital and Medical Center*
Architect: *TRO/The Ritchie Organization—Wendell R. Morgan, Jr., project executive; Robert W. Hoye, Erich Griebling, principals-in-charge; Robert Burkhart, Steve Fiore, project managers; Carlos Melendez, Kregg Elsass, Frank Botti, Russell Fuller, David Sweeney, project designers; M. Allison Miele, interior designer; Zack Domike, Luis Riobueno, Visda Saeyan, Anthony Iacovino, Christian Mungenast, team*
Engineer: *Hallisey and Hebert (structural)*
Construction Manager: *Gilbane Building Company*









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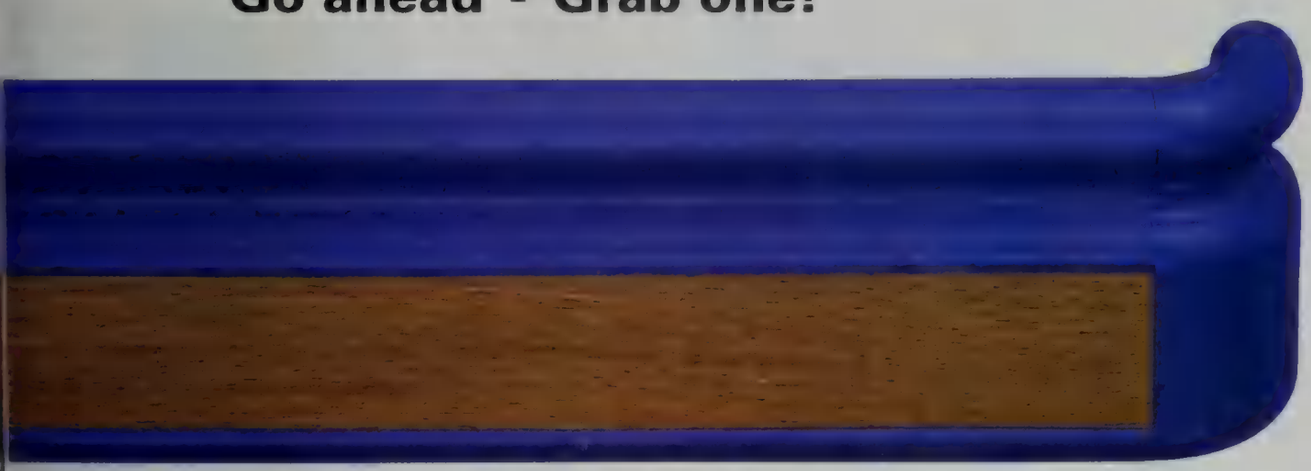
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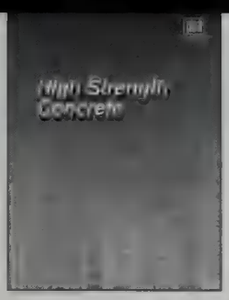
From the [illegible] Reynolds Metals Company. © 1993 RMC

Circle 36 on inquiry card

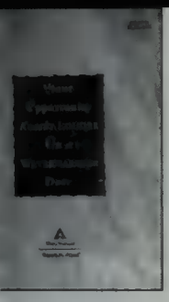
duct Literature



. Fire-rated glazing
alog provides installation and nical data on several fire- and y-rated glasses, including Con- m, built to the radiant-heat irements of ASTM E-119, and swiss, a 30-minute, distortion- monolithic glass that meets rdous-location impact standards. y and Fire Technology, Inc., Div. effe's, Inc., San Francisco.



401. High-strength concrete
A 56-page engineering bulletin presents new data on the types and uses of chemical and mineral admixtures, such as silica fume, in creating concrete with ultra-high compressive strengths. Describes the development and properties of high-strength concrete, with photographs of several recent projects. Portland Cement Association, Skokie, Ill.*



. Architectural doors
page 1994 catalog gives con- tion, finish, detail, and warranty mation on all types of commer- oors, including staved- and cleboard-core types; fire-, X-ray, and-rail, and sound-proof doors; ther custom configurations. test data for all products. rhaeuser Co., Architectural Division, Marshfield, Wis.



403. Compartment systems
A new catalog covers all of this makers toilet- and shower-enclosure designs, including solid-core stainless steel, enamel-finished steel, laminate-over-particleboard, and solid-phenolic styles. Clear drawings detail all hinging and mounting options; chart illustrates 40 standard-color choices. Metpar Corp., Westbury, N.Y.



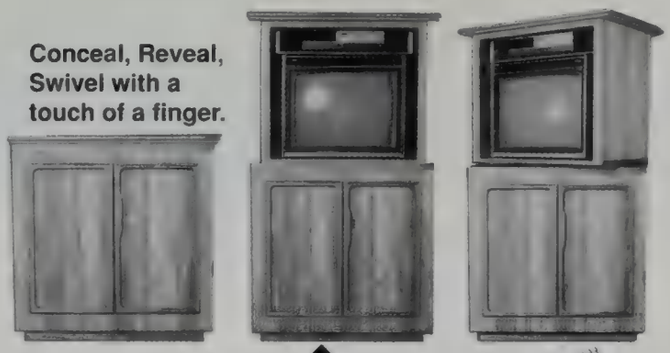
Cladding options
ful brochure highlights pre- ted metal claddings, including ard tongue-and-groove panels, num honeycomb curtain walls, -formed metal skins, aluminum ted panels, interior panels, and ess-steel cladding. Color and texture choices are described. ectural Specialty Products, Div. go Metallic, Chicago.
uct Data on CAD disk



405. Translucent panels
A series of technical catalogs explain the benefits of the Kalwall fiberglass-and-aluminum structural panel in a variety of building applications: as a self-contained wall system; replacement fenestration; exterior recladding; and as roof panels and skylights. Details installation and FM, UL, and other test results. Kalwall Corp., Manchester, N.H.

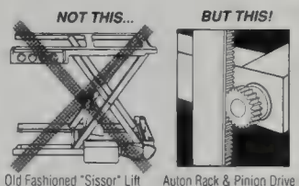
Continued on page 115

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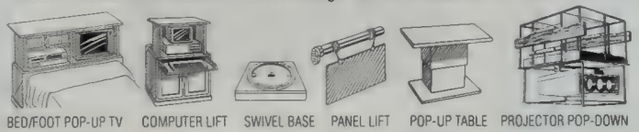
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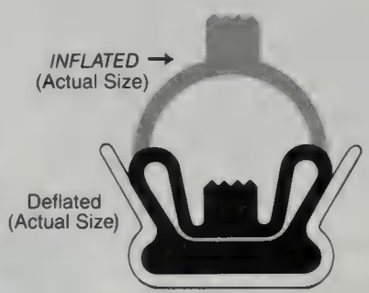


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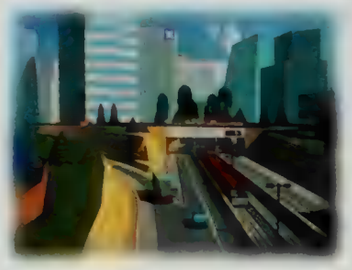
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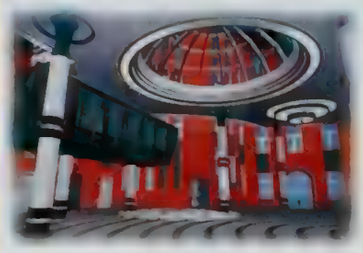
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fitting of block or pavers to make
ows, walls, skylights, and floors.
log illustrates recent installa-
from shower stalls to light-
sing floors in shopping malls.
ains the security, decorative, and
r features of glass-block walls.
e Brick Co., Ft. Worth, Texas.



407. Louvers and grilles
An architectural brochure demonstrates the design versatility of metal louver systems, with photos showing components used as sun-control devices; privacy, parking, and equipment screens; and as decorative facade elements. Finish options include Kynar coatings, baked enamels, etching, and anodizing. Industrial Louvers, Delano, Minn.



. Ceramic-on-glass
log on the EtchMatte treatment
ibes it as fusing a thick ceramic
y onto glass in precise silk-
ned designs. Installations shown
de custom room dividers and
tions, entrances, signage, and
transmitting lobby walls.
ned" glass has a shading coeffi-
of 0.86. Milgard Tempering,
na, Wash.



409. Total building enclosure
Well-done 36-page architectural catalog covers the merged Smith Steeline line of metal wall and roof systems. Products include Foamwall insulated panels, Crown Signature stainless-steel walls, and curved and profiled panel systems. Photos illustrate finishes close-up and recent projects; connections are detailed. Smith Steelite, Moon Township, Pa.



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ridge/Aquabatten, Inc.,
n, Mass.
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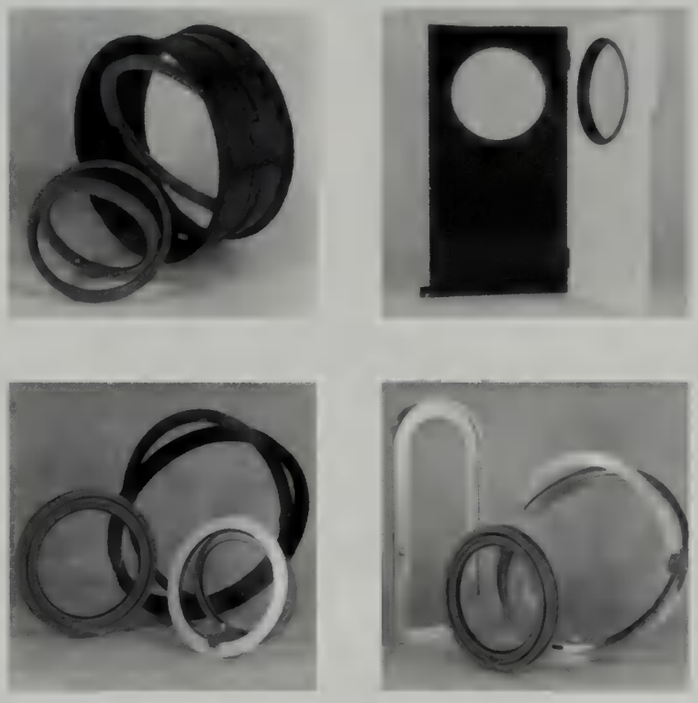


411. Permanent protection
Pro-Tek architectural interior handrails, wall guards, corners, and specialty wall- and door protectors have a Class 1 fire rating. A 24-page catalog gives installation, ADA-suggested placements, and other information on the decorative and functional product line. All color options shown. Pawling Corp., Wassaic, N.Y.*

Continued on page 117

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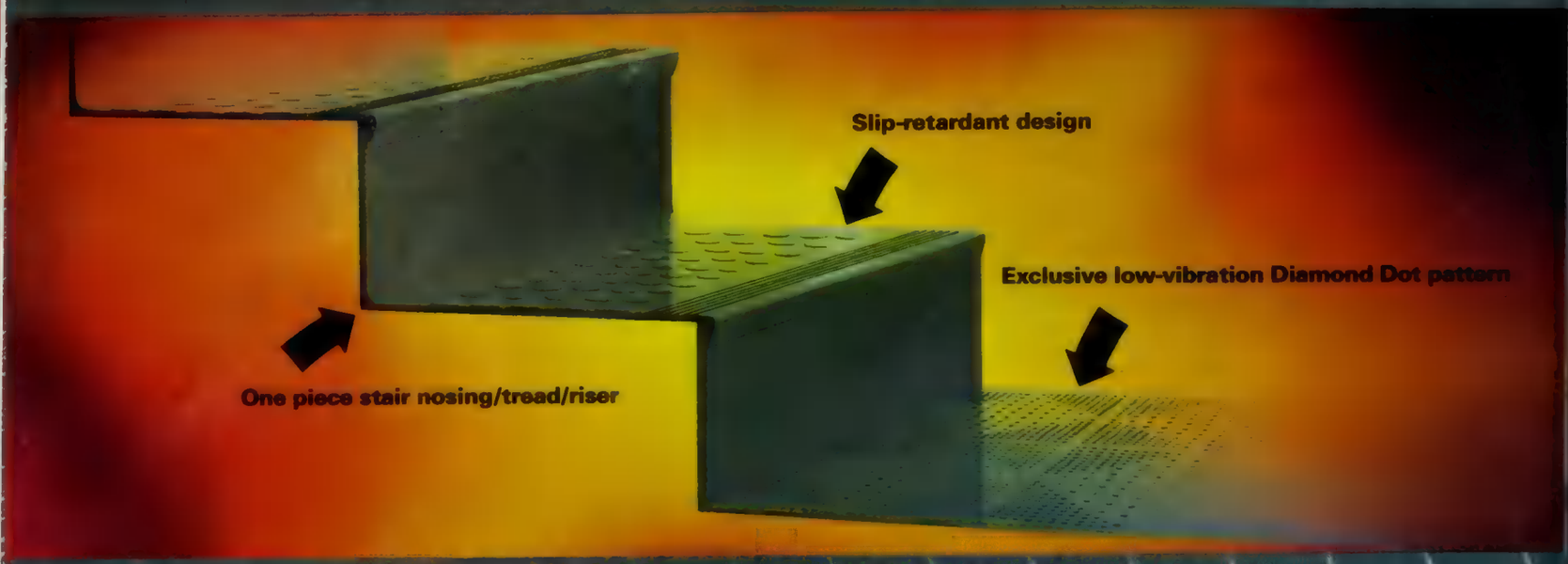
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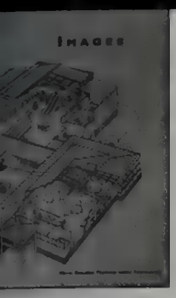
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personnel. Small charge. Metal
lding Manufacturers Association,
veland.



413. Art and drafting materials
A 320-page catalog shows more than 20,000 items, including inkjet and electrostatic plotters, graphics software, pads, markers, and traditional graphic supplies. Also features fine-art supplies, presentation equipment, and furniture,. Frequent-buyer discount program. $5 charge refundable on first order. 800/367-3729. Charrette, Woburn, Mass.



4. Concrete paving
lor catalog features new architec-
l paving available in the
anite concrete-patterning
em, including large terra-cotta
shapes, slates, and limestone
s. Illustrates on-site
dential installations. Bomanite
p., Madera, Calif.



415. Restaurant flooring tile
Designed for the special slip-and-fall problems of commercial kitchens and food service, X-series ceramics have a metallic additive throughout the tile said to offer slip-resistance for the life of the floor. Illustrates on-site installations, along with coordinating solid-color tile. Metropolitan Ceramics, Canton, Ohio.



. Commercial windows
an's new catalog offers in-use
ography and frame details for a
ne of architectural aluminum
ows for renovation or new con-
tion. Air-infiltration and other
nformation included. Jordan
itectural Products, Inc.,
phis, Tenn.



417. Corrosion-resist concrete
Technical guide explains the benefits of Rheocrete 222, a water-based admixture for reinforced concrete. It is said to promote structual integrity, extend the service life and increase the sulfate resistance of concrete, and greatly lower maintenance costs. Needs no special handling; compatible with other admixtures. Master Builders, Inc., Cleveland.■

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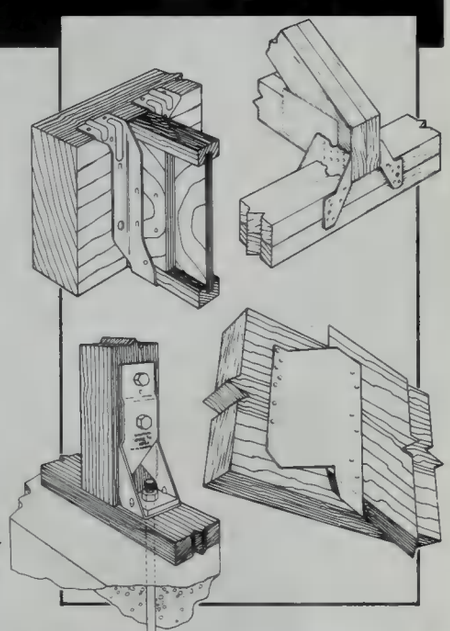


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anufacturer's Sources

r your convenience in locating building terials and other products shown in this nth's feature articles, RECORD has asked the chitects to identify the products specified.

ges 68-75
nanki Museum, Seoul, Korea
u Sung Woo, Architect
un Architects & Engineers,
sociate Architect
ne Architects, Associate Architect
ad-coated copper roof: Revere Copper Prod-
s. Aluminum windows and entrances: Suchco
ternational. Art glass, glass block: Vitraux
onner. Parquet flooring: Parquets Briatte.
llery fixtures: Edison Price Lighting. Lumi-
res: Louis Poulsen.

ges 86-93
nerican Center, Paris
ank O. Gehry & Associates, Architect
rtain walls: Laubeuf. Glass: St. Gobain. Ele-
ors: Otis. Acoustic ceiling: Armstrong. Tile
oring: Marazzi; Villeroy & Boch. Interior
hting: Mazda; Erco; Europhane. Exterior:
zda; BEGA.

ges 94-97
edy Creek Emergency Services,
lando, Fla.
nturi, Scott Brown and Associates,
sign Architect
Schenkelshultz, Associate Architect
Cladding: American Porcelain Enamel Co. EIFS: Senergy. Batten-seam roofing: Petersen Aluminum. Modified-bitumen roof: Siplast. (Veral). Windows: Vistawall Architectural Products. Upward-acting doors: Ceco/Windsor. Paints: Benjamin Moore. Flooring: Armstrong. Parking-area fixtures: Thomas & Betts. Landscape lights: Hydrel. Bollards: LSI Lighting. Lobby: Gammalux Systems.

Pages 100-103
St. Luke's Medical Center, Milwaukee
Bobrow/Thomas and Associates, Architect
Curtain wall and windows: Wausau Metals. Glass: Viracon. Skylights: Super Sky Products. Limestone: Rossi USA. (Hauteville). Brick: Interstate. EPDM roofing: Firestone Building Products. Entrances: Kawneer. Accordion fire doors: Won Door. Metal finishes: Tnemec. Paints: Benjamin Moore. Tile: American Olean; Dal-Tile. Fluorescent strips: Lithonia. Sconces: Artemide. MR16 accents: LSI.

Pages 104-105
MRI Center, Alexandria, La.
Douglas Ashe and Associates and Lewis Brown & Associates, Architects
Tsoi/Kobus & Associates
EIFS: STO Industries. Structural-steel framing: Vulcraft. Roofing: Siplast. Metal roofing: Berridge; Petersen Aluminum. Storefronts: United States Aluminum. Sliding doors: Besam. Ceilings and resilient flooring: Armstrong. Vinyl wallcoverings: Koroseal; Olney. Interior lighting: Lithonia; Elliptipar Lighting.

Pages 106-107
St. Thomas-Elgin General Hospital
St. Thomas, Ont.
NORR Partnership, Limited
Roofing: Carlisle. Upward-acting doors: Richards Wilcox. Windows: Sentinel Aluminum. Glass: AIG.

Pages 108-109
St. Francis Medical Center, Hartford, Conn.
TRO/The Ritchie Organization, Architect
Windows: Kawneer. Masonry: Consolidated Pre-Cast. Tinted glazing: Viracon. Wood doors: Weyerhaeuser. Automated entrance: Stanley. Terrazzo flooring: Rustic Terrazzo. Resilent flooring and acoustic ceilings: Armstrong. VCT flooring: Tarkett. Indoor lighting: Litecontrol; H.E. Williams. Exterior: Alkco; Kurt Versen; LiteLab.

Corrections
- CGHP's Castle Lane project for the disabled [RECORD April 1994, page 13] came in only 0.36 percent over budget, not 36 percent.
- Cervin Robinson took the color photographs of Adelbert Hall, Case Western Reserve University [RECORD, February 1994, pages 102-107].



Just a couple of words about the quality of our doors.

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The length of a door warranty says a lot about the quality of the door and the responsibility of the company behind it. And, the Kawneer Limited Lifetime Warranty on welded door corners says it all. No other doors offer the same warranty because no other doors are made like Kawneer. The Dual Moment corner construction is designed to resist door flex which can loosen mechanical fasteners and destroy the door. Then, corners are permanently joined with SIGMA deep penetration welds and SIGMA fillet welds to provide the strongest door corner joinery anywhere. It's good for a lifetime. The Lifetime Warranty on door corners. Another Kawneer mark of responsibility. Ask your Kawneer dealer, or write or call: Kawneer Company, Dept. C, Technology Park/Atlanta, 555 Guthridge Court, Norcross, GA 30092



Kawneer

The Mark of Responsibility

Recy[illegible]tural Aluminum Products

Circle 46 on inquiry card

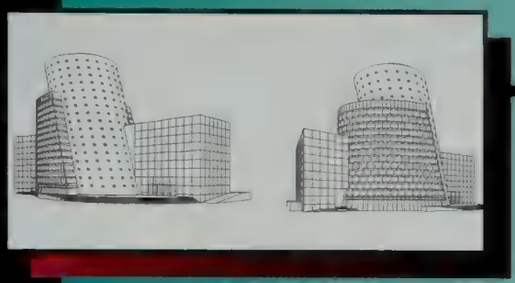
Circle 47 on inquiry

Architrion™ 5.0

PowerPC™

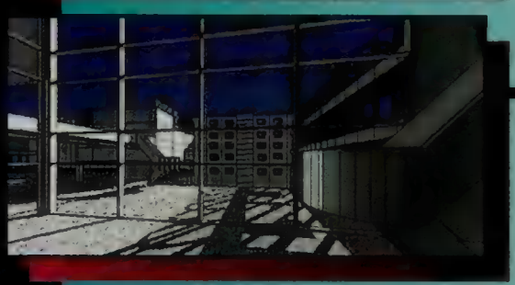
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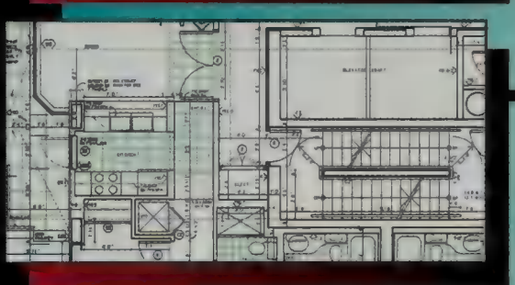
Explore!

Step into a whole new dimension of creative capabilities. Get better insight on design options all within an easy to learn environment.



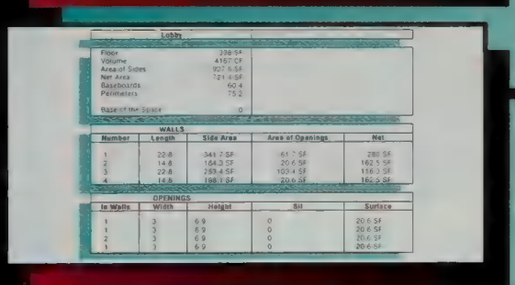
Visualize!

From your 3D model, automatically generate views in perspective, axonometry, plan, section and elevation. Also, directly create and replay Quicktime™ movies of your animated 3D models.



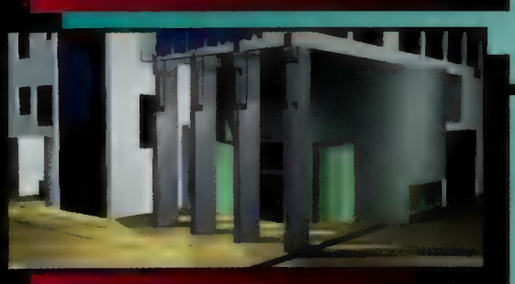
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Montreal, Québec, Canada H2V 4H9

THE MARKETPLACE

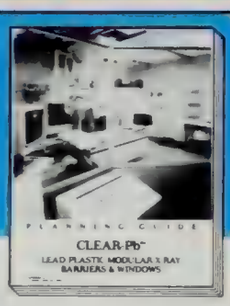


Architectural Record Review

A collection of the best Shopping Centers, Healthcare Facilities, Office Buildings, and Educational Buildings from the pages of Architectural Record. Reviewed and updated...tracking reports on regional construction trends. For more information about these issues write: ***Architectural Record Review, 1221 Ave. of the Americas, 41st Floor, New York, N.Y. 10020.***

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FREE X-Ray Room Planning Guide



Made of lead-impregnated, transparent plastic, CLEAR-Pb® X-Ray Room Shielding provides complete radiation protection with panoramic viewing. Features include prefabrication for quick on-site assembly, attractive, space-saving decorator look and shatter resistance with a choice of lead equivalencies. Free CLEAR-Pb X-Ray Room Planning Guide is available.

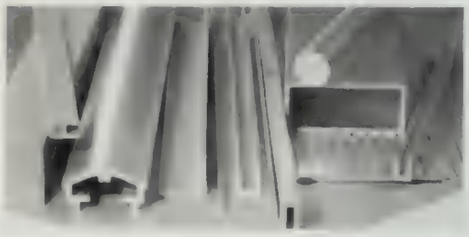
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Architectural Record, Circulation Dept.
1221 Ave. of the Americas, NY, N.Y. 10020

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HANDY-SHIELD safety covers conform to the Americans Disability Act (ADA) whenever installation of drain & supply lines are required to protect individuals using wheelchairs from burns. Smooth, soft basins. HANDY-SHIELD is a unique conforming, abrasion resistant foam lining & exterior coating in an array of colors, resulting in an appealing finished product. Please call (619) 322-1772 for more information.

Circle 52 on Inquiry Card



New Site Furnishings

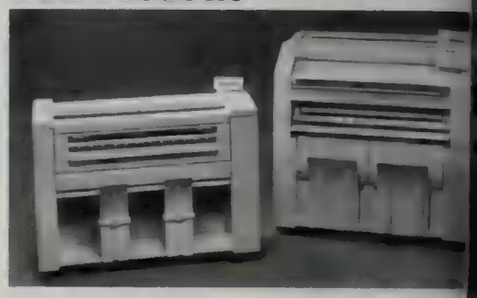
A dozen **TimberForm®** contemporary and traditional design families of matching benches, trash receptacles, litter containers, planters, tree grates and bike racks. For new brochures and a 96 page comprehensive specifier call toll-free **1-800/547-1940, Ext. 517**

Columbia Cascade

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Circle 53 on Inquiry Card

New Products



329. Large-format reprographics

Two new copiers are said to make large-format, plain-paper document reproducti more accessible to architects and enginee with lower-volume needs (under 5,000 co per month). Described as easy-to-use and reliable, the relatively compact units can placed in hallways, within individual dep ments in a firm, or any other point-of-nee environment. Priced from $15,495. Xerox Engineering Systems, Rochester, N.Y.





330. Custom-designed room systen

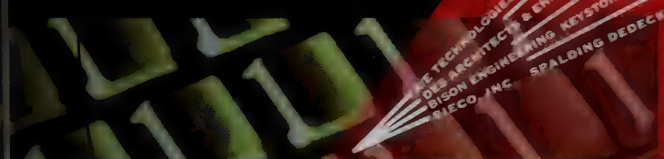
A new firm will design/build space-effici units such as home offices, wardrobes, o media walls to order, using CAD softwa select from 1,600 possible components a dimensions. Pieces are constructed of natural-wood veneers; office above is m Dimension Storage Systems, San Franc

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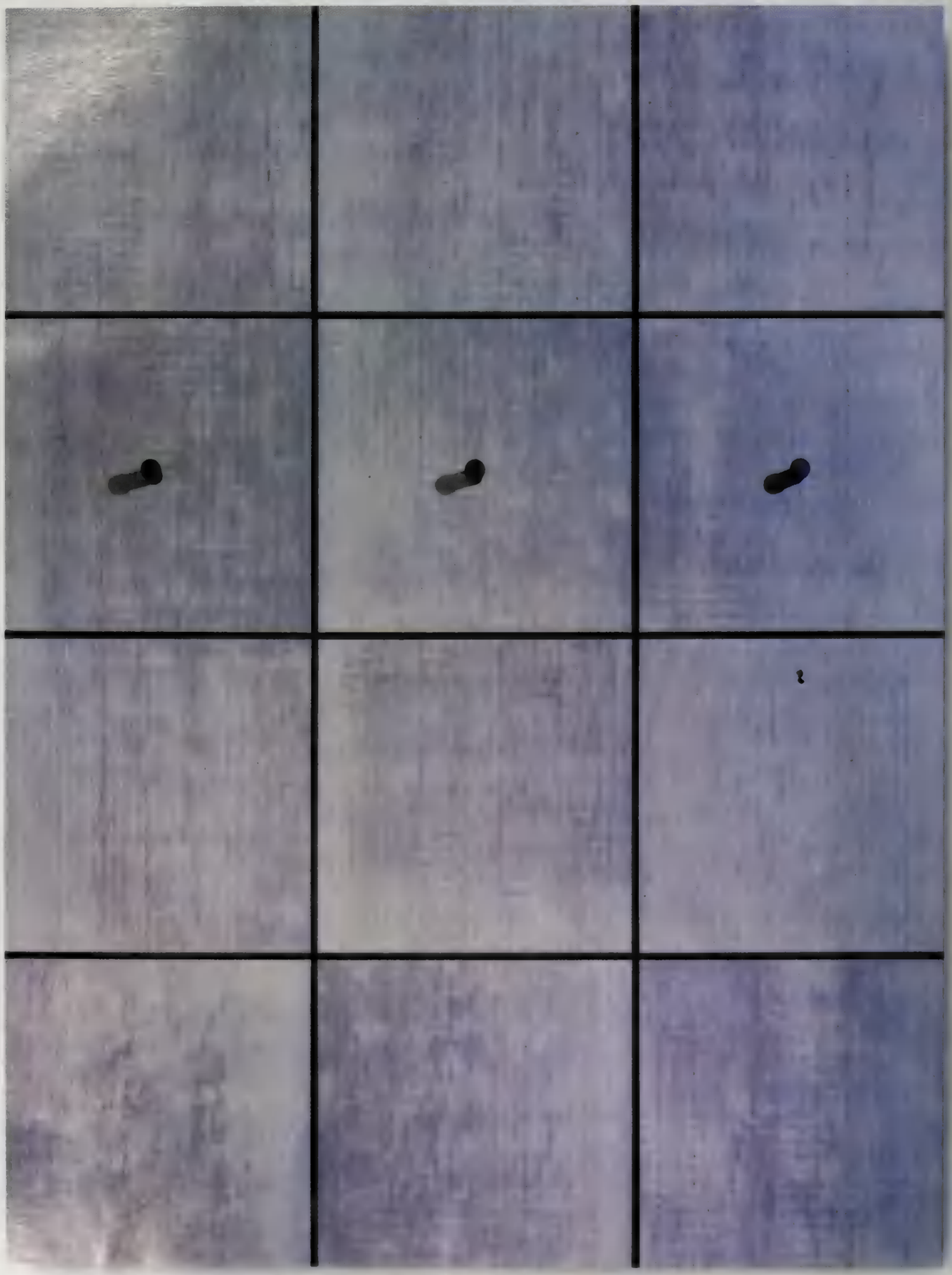
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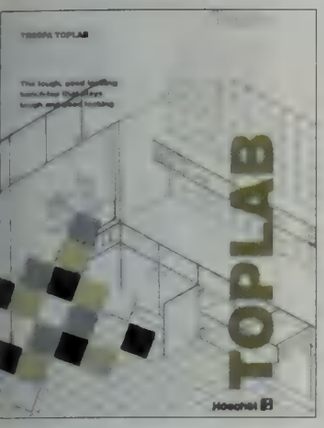
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Trespa® Toplab® grade resists strong acids, e.g. 96% Sulfuric, and other chemicals. Toplab is durable, easy-to-clean, and available in colors. It will not rot, rust, delaminate, or support bacteria. Toplab is available in sizes up to 1" thick and 12' in length; it remains flat for excellent butt joints and is 25% lighter than epoxy. 1-800-4-TRESPA.

Hoechst Celanese Corp.

Circle 56 on Inquiry card

Decorative Wood Ceilings and Walls

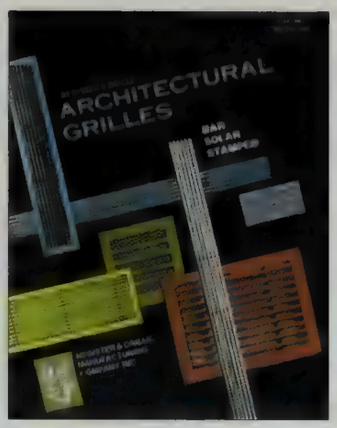


NaturaLines™ wood ceilings and walls are available from Conwed in numerous styles and finishes. Wood ceilings and walls feature dynamic lines for such environments as hotels, banks, offices, reception areas, and schools. Styles include linear, louver, cellular, and coffer in woods such as oak, hemlock, maple, or desired species. NaturaLines wood ceilings and walls are available in fruitwood, walnut, mahagony, and custom stains or choose from finishes such as clear lacquer or Class A.

Conwed

Circle 57 on Inquiry card

Decorative Grilles



Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Ave., Bklyn. NY 11222. 800-521-4895. Fax: 718-349-2611.

Register & Grille Mfg., Co.

Circle 58 on Inquiry card

Concrete Waterproofing by Crystallization

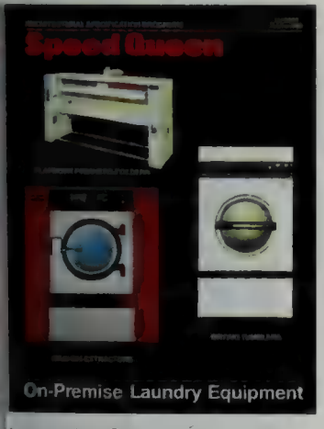


Applied as a slurry coating, Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that 'plugs' the pores of the structure preventing water seepage. Xypex is ideal for use on the 'inside' of wet underground structures.

Xypex Chemical Co.

Circle 59 on Inquiry card

Institutional Laundry



Speed Queen washer-extractors, drying tumblers, and flatwork finishers are described as ideally suited for use in healthcare facilities, hotels, motels, schools, and other large-volume on-premise laundry applications. A Sweet's catalog insert provides architectural specifications. Speed Queen, a Raytheon Co., Ripon, WI

Speed Queen

Circle 60 on Inquiry card

Revere Copper Shingles

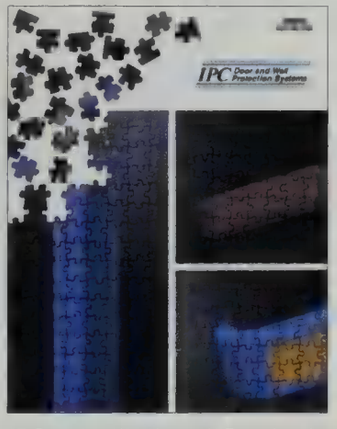


Revere Copper Shingles are quicker and easier to install than ordinary asphalt shingles. There are no special skills required & no special tools. Because Revere shingles are manufactured from solid copper, not a foil laminate, they will likely last as long as the building they protect. To learn more about our copper shingles, or any of our other copper roofing products, call us toll-free at 800-448-1776.

Revere Copper Products

Circle 61 on Inquiry card

Door and Wall Protection Systems

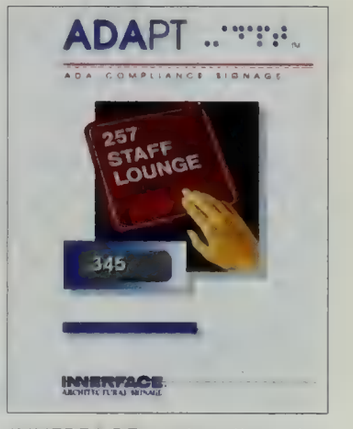


IPC - Institutional Products Corporation is a manufacturer of high impact door, corner and wall protection systems. Our catalog illustrates a product line that includes Handrails, Corner Guards, Wall Guards, Kickplates and Wallcovering. Our durable vinyl products, offered in 50 designer colors, provide an attractive way to protect interior finishes from damage.

Institutional Prods. Corp.

Circle 62 on Inquiry card

ADA Compliance Signage



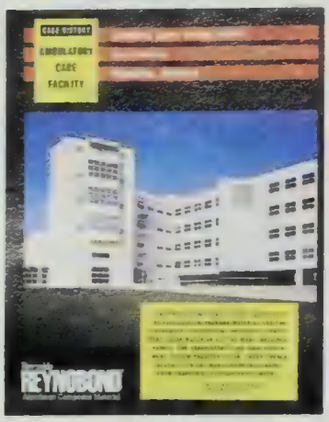
INNERFACE makes it easier for you to meet the new Americans With Disabilities Act (ADA) signage standards. INNERFACE offers (1) A variety of compliance signage, (2) National distribution, (3) Solid 21 year history and (4) Economical, attractive, & highly functional interior and exterior signage. INNERFACE also offers a complete line of interior and exterior signage. For free literature Please call: (800) 445-4796.

INNERFACE

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Product Literature Showcase

MCMC Case History



Fire resistant REYNOBOND® Aluminum Composite Material is featured in a case history of the exterior cladding of the Milwaukee County Medical Center in Wauwautosa, WI. Containing details and comments by the design and contracting principals, the report is available with a complete REYNOBOND® Architectural Brochure. Contact Reynolds Metals Co.; Construction Products Div. ; P.O. Box 27003; Richmond, VA 23261. Telephone (804) 282-3629; FAX (804) 281-3629.

Reynolds Metals Co.

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Versatile Fiber Gypsum Panels Offer Strength; Fire & Moisture Resistance



FiberBond® fiber gypsum panels provide: a solid, impact-resistant surface; and thermal insulation; moisture tolerance and fire resistance. Available for three applications: wallboard; exterior wall sheathing; and flooring underlayment. The cellulose fiber in FiberBond panels comes from recycled newspaper and contributes to a cleaner environment. Sales: Chicago, IL: **(708) 517-8833** fax **(708) 517-8870**. Portland, OR: **(503) 221-0800** fax **(503) 796-0107**.

Louisiana-Pacific

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Resilient rubber floor in 13 colors. Established in 1957. "We're very pleased with the looks and durability of Tuflex. Our new floor matches the Tuflex we installed 10 years ago in our clubhouse. "Carpet may be less expensive initially, but in the long run we have saved 25% in maintenance costs with Tuflex flooring."
For samples call Tuflex Rubber Products Flooring 1-800-543-0390 or fax 813-875-2312.

Tuflex Rubber Prods. Flooring

Circle 66 on Inquiry card

TimberForm® Colonnac Catalog of Benches E

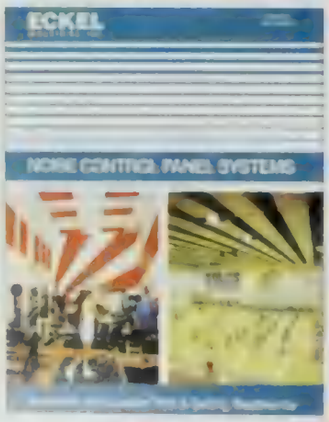


A new eight page cat presents this contempo series of site furnishi Bench frames of heavy- "schedule 40" pipe sup seating surfaces of pe rated steel, half-round bar, or Alaska yellow ce Marine Teak or Purplehe slats. Matching li containers are also offe All metal parts are po coated in a choice o standard & over 170 sp designer colors. Call to for your copy.
1-800/547-1940 (ext.522).

Columbia Cascade

Circle 67 on Inquiry card

Noise Control Panels



Attractive, high-performance [illegible] can quickly [illegible] economically improve the environment of libraries, office, computer rooms, [illegible] restaurants, [illegible] and [illegible] with [illegible] Eckel's [illegible] spot-[illegible] without [illegible] providing [illegible] means of [illegible] lems in new [illegible] tion projects. [illegible] 155 Fawcett [illegible] 02138. Tel 617-[illegible]

Eckle Industries, Inc.

Circle 68 on Inquiry card

Child Safety Products



When a project calls for extra attention to babies & families specify the Koala Bear Kare line of child safety products. Designed & engineered with the utmost safety in mind. This full color brochure is now available from Koala Corp. & provides full details & specifications for all three products: the Child Protection Seat, Infant Seat Caddie & the ever-popular Baby Changing Station. With over 50,000 installed worldwide, the Koala Bear Kare Baby Changing [illegible] has a flawless safety record & meets ADA rules & regulations. [illegible] Ny 144 Section 4.4). Call [illegible] 030.

Koala Corporation

Circle [illegible] Inquiry card

ADA Sign Solutions



Achieve compliance with the Americans with Disabilities Act using APCO's broad range of ADA sign products. Features include the Grade 2 Braille and 1/32-inch raised characters required by the ADA, as well as a choice of unlimited graphics in a variety of colors. Factory-made interior and/or exterior signs or "do-it-yourself" options are available. Call APCO at (404) 688-9000 for more information.

APCO

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The Discrete Acce & Egress Solution

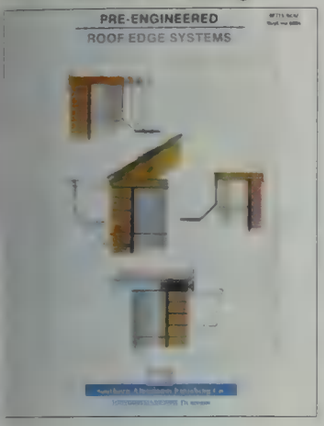


Security requirements, s constraints and aest considerations are a f the problem-solving ap tions for the JOMY S Ladder. The ladder's di appearance makes ideal solution for acces egress requirements. ladder looks like a drai when closed, but open heavy-duty ladder wit resistant rungs and a s rail. Jomy Safety Lad Co.,1728 18th St., Ste Boulder, CO 80302. F 800-255-2591.

Jomy Safety Ladder

Circle 71 on Inquiry card

New Adjustable Wall Coping



New 1994 brochure features the industry's first truly adjustable parapet wall coping by Southern Aluminum Finishing Co.. FM I-90 rated, this innovative product will adjust to fit parapet widths from 7-17". In addition, the brochure highlights the Designer Series industrial grade gutter systems along with other pre-engineered roof edge products. Come see us in L.A.; AIA-Booth 717.

Southern Aluminum Finishing Co.

Circle 72 on Inquiry card

Glass & Aluminum Skylights

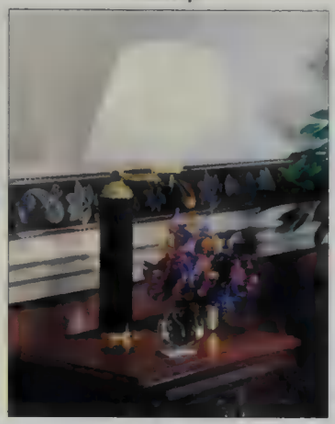


Super Sky Products, Inc. is enjoying its 6th decade in the custom extruded aluminum skylight business. Throughout its history, Super Sky has designed and developed many of the systems and set most of the standards used in the contemporary skylight industry. The company has enjoyed the reputation of building and installing the finest skylights in the world.

Super Sky Products, Inc.

Circle 73 on Inquiry card

Brass 'n Color® Lamp

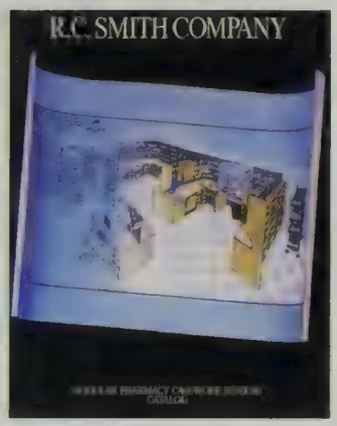


The new SpaceSaver Bedside Cabinet Lamp from Adjustable Fixture is specifically designed to meet the special needs of the healthcare environment. The handsome Brass 'n Color® Lamp is off-set to the rear of the cabinet top to provide extra space for personal items. Plus it's mounted for tip-proof stability. Available with night light, plug-in receptacle and your choice of color. Unbreakable shade and energy-saving lighting options. Free 30-day trail sample now available. Call 1-800-558-2628 for details.

Adjustable Fixture Co.

Circle 74 on Inquiry card

Modular Pharmacy Casework Systems

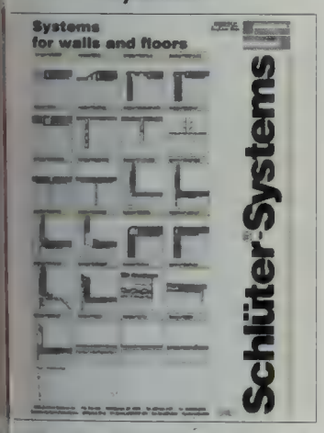


R.C. Smith Casework is totally modular and freestanding, requiring no attachment to walls, floors, or ceilings, therefore utilizing approximately 30-40% more usable space than cantilever style components. We provide total involvement, from concept and CAD design to finished installation. We also provide a full three year warranty on all equipment when purchased with our installation program. Free catalog call (800) 747-7648 or fax (612) 854-8160.

R.C. Smith

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Unique Systems

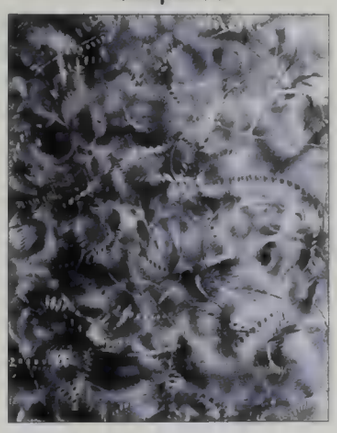


chluter Systems Inc., specialtes in unique systems to solve common problems found in le, marble and natural stone nstallations. Special solutions or such areas as floor transions, expansion joint requirements, anti-slip edging for tairs, waterproofing of ubstrate layer, relief from ress cracks and the elimination of efflorescence, are ffered by Schluter Systems. Many of our products are .D.A. compliant. For our free atalog, call us at 1-800-361-127

chluter Systems, Inc.

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Custom Metal Graphics



METAL GRAFFITI

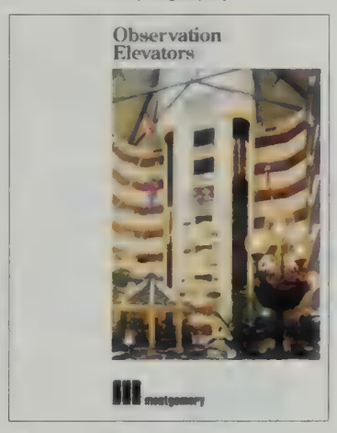
SURFACE DESIGN + Technology produces vandal resistant, random swirls on virtually any size and type of metal for elevators, doors, walls, ceilings, and furniture. These finishes can be made to your specifications.

For additional information on custom or standard designs, call 800-537-1127.

SURFACE DESIGN + Technology

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Observation Elevators



Observation elevators have become increasingly popular. They give passengers an expansive view of architecturally interesting lobbies, atriums, etc. Responding to this popularity, Montgomery Elevator Co. has published a new brochure devoted to Hydraulic and Traction Geared Observation Elevators. Helpful dimensional information, details regarding shape and decorative shrouding data are all provided.

Montgomery Elevator Co.

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Waste and/or soiled Linen

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- Improve the building environment, management, and maintenance
- Full-vacuum and gravity/vacuum tecnology
- Custom design each system to building specifications

Transvac System, Inc.

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Product Literature Showcase

Decorative & Protective Services



Custom Laminations offers many essential services to upgrade COM upholstery fabrics for use in healthcare facilities. These include Vinylizing for fabric protection, Flame Proofing, laminated Fire-Blockers to help pass Cal TB 133, Micro-Block, an anti-microbial moisture barrier, and Knit/Bac upholstery backing. Call (201) 279-9174 or fax (201) 279-6916 for more information, or write to Custom Laminations, Inc., 932 Market St., PO Box 2066, Paterson, NJ 07509.

Custom Laminations, Inc.

Circle 80 on inquiry card

Rugged Scrub™

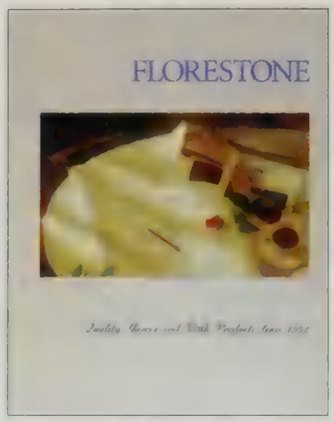


Arden Architectural Specialties, Inc. is the leading manufacturer of entrance mats and grates nationwide. A key market for our products is health care facilities, where specifications require a superior cleaning surface, while providing slip resistance for pedestrian safety. Our new Rugged Scrub™ tread insert is the most effective cleaning surface you can buy. It's scientifically designed to eliminate dirt under heavy traffic conditions. For further information call (800) 521-1826 from the US or Canada.

Arden Architectural Specialties

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Barrier-Free Showers and Baths



New color catalog features over 180 shower and bath products, including terrazzo shower bases. Many barrier-free products are featured, including two-piece and three-piece models for remodeling projects. Specifiers and architects receive full product specification binders. Call 1-800-446-8827 or fax 1-209-661-2070.

Florestone Products Co.

Circle 82 on inquiry card

Using folding fire doors to o come code design restricti



Won-Door Corp. takes y around the country on a t of high profile and historic r toration building projec Each of which solved unique code restrictive des problems with FireGuard fo ing doors. To receive y free copy this enlightening minute video tape, cont your Won-Door representat or call direct (800) 453-84

Won-Door

Circle 83 on inquiry card

System 40/60



System 40/60 by Datel-Byrum of North America features design and engineering of storage and work station products for [illegible] clinics and [illegible] The line includes nursing [illegible] out cabinets. Modular [illegible] nents such as [illegible] and shelves [illegible] nized storage nience, and versatility.

Datel-Byrum of North America

Circle [illegible] on inquiry card

Interior Systems LaCrosse



***Arkid* tecture Funscapes** is the newest addition to **Interiors Systems' Signature Series**. The *Arkid* tecture collection uses a unique computerized cutting system to produce standard and custom acoustical ceiling tile designs for schools, children's clinics, hospitals, daycare centers, retail stores. Use single or multiple panels with any color. Call [illegible]

Interior Systems

[illegible] Inquiry card

Metal Ceilings & Specialty Products

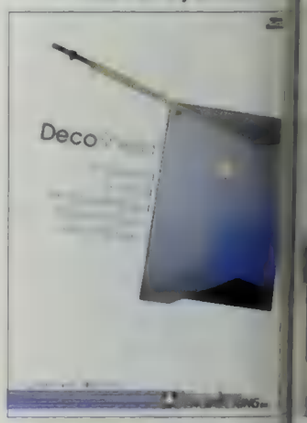


Open cell, linear metal, luminous, baffle, and metal panel ceiling systems in a wide range of styles and options are but a few of the products covered in this comprehensive ceiling systems brochure. Tamper resistant security ceiling systems are also detailed. Vital information for your files.

Interfinish

Circle 86 on inquiry card

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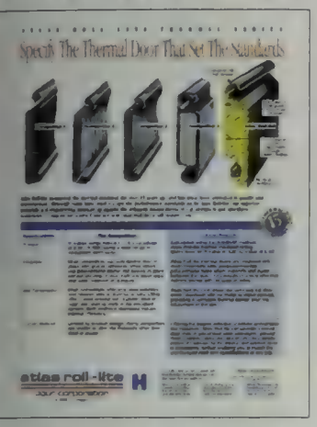


The DecoShield® Mod System by **Creative Syst Engineering, Inc.**. Produ from high-impact, low fl spread, low smoke gen tion BF Goodrich engine resin, this system is UL teste listed for use with listed C & metal fire sprinkler pip Snap-fit cover support sy is designed to be installe a piping contractor & ca utilized with hot w heating, communicati plumbing & air conditio systems. Call (608) 757-0 fax: (608) 757-0721.

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Atlas Roll-lite

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Planter Technology

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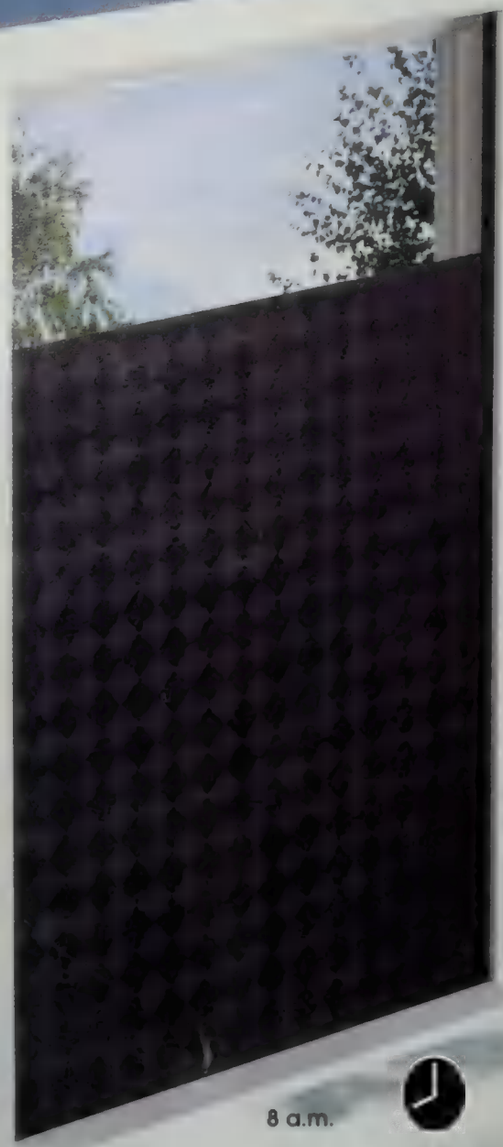
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Serena™

A Totally New Concept in Window Shading Systems



8 a.m.

Window 1, Shade 1; clerestory for privacy with some daylight.



10 a.m.

Window 1, Shade 2; sunscreen reduces glare and increases comfort.



1 p.m.

Window 1, Shade 3; total light blockout for audio/visual presentation.



3 p.m.

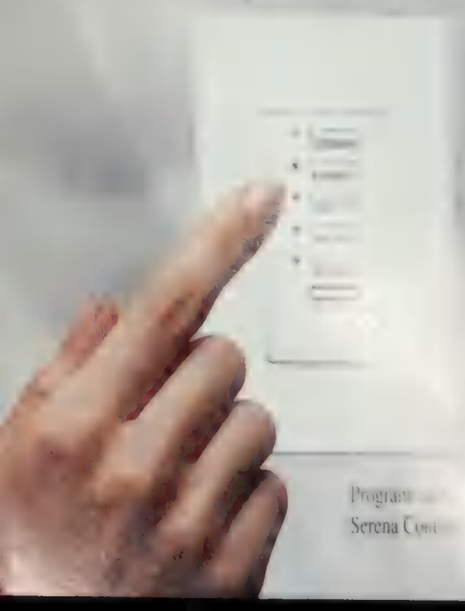
Window 1, Shade 4; custom designed art shade for a personal touch.



5 p.m.

Window 1, Clear View; provides full daylight without shade.

4 custom shades plus a clear view for every window ...at the touch of a button.



The Serena System.

Serena is a unique motorized window shading system that contains a rolling set of up to four custom fabric shades plus a clear view for each window. All components, including the programmable Serena control, are supplied by Lutron.

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- Precise shade alignment
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For a free Serena video, or to arrange a presentation, call 1-800-523-9466. Also ask about Serena for skylight applications.

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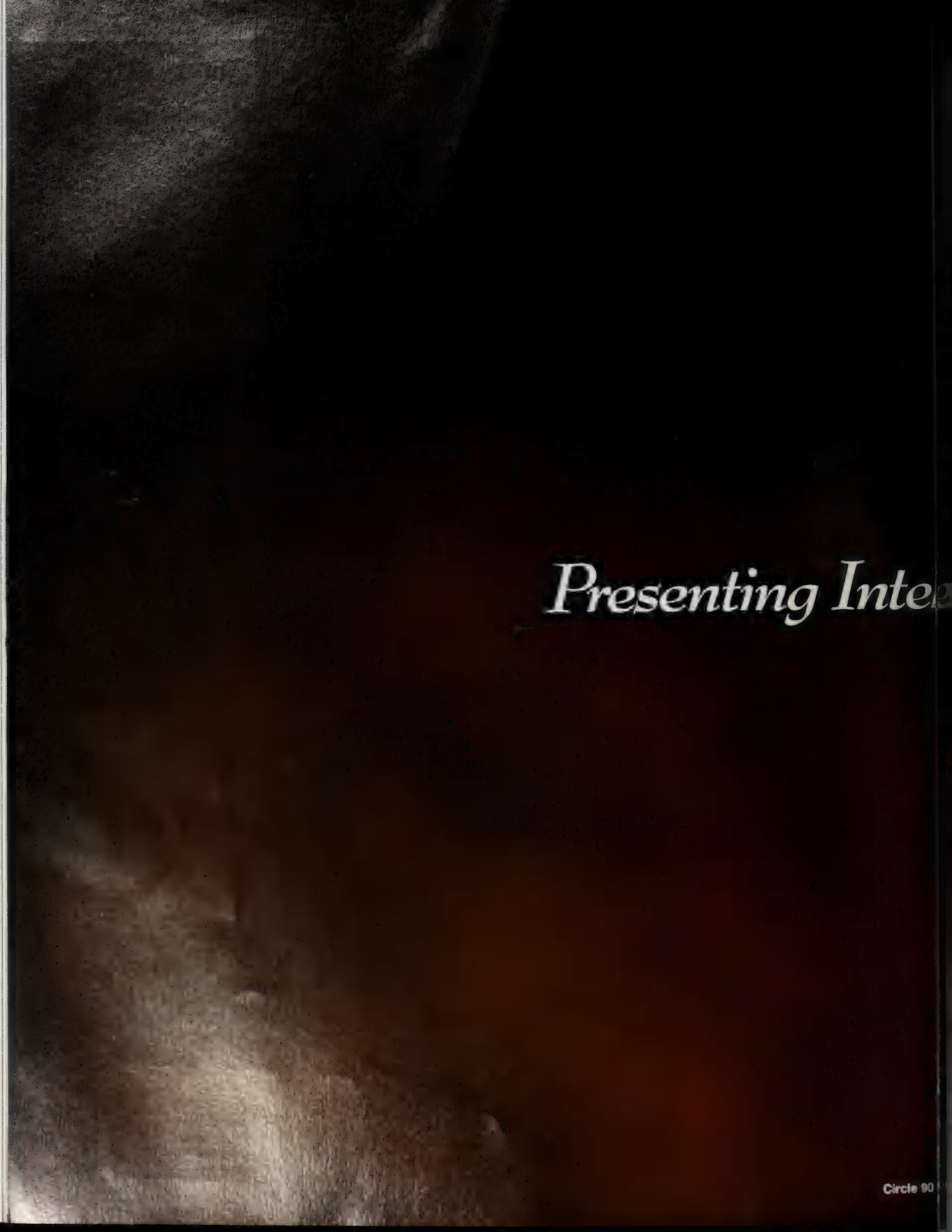
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Color



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Circle No 91

Dance of Healing, Memphis, Tennessee **30**

Le Bonheur Children's Medical Center, West Patient Tower
Craig A. Roeder Associates, Lighting Designer
J. Wise Smith Associates, Architect

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Cover:
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Memphis, Tennessee, West Patient Tower
Craig A. Roeder Associates, Lighting Designer
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New Leviton MicroDims Take Scene Controls into the Next Generation

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Since its inception, scene control technology has enabled users to enjoy one-touch preset dimming of large groups of lights at various levels. In homes and in all kinds of commercial applications, scene controls have employed lighting to create the kinds of "moods" (scenes) and special effects possible at one time only with stage lighting. With scene controls, the possibilities are indeed boundless. Now, Leviton's new MicroDims take scene controls into the next generation.

Leviton MicroDim Scene Controls: Combining new technologies with the elegance of decorator styling.

Leviton's new MicroDim line incorporates the latest microprocessor technology into scene dimmers. They transmit data in virtually the same fashion as a small computer network. In addition to providing a lot more convenience, they're easier to use and far easier to install because these devices use standard wiring methods and materials—no bulky central control station, no tangle of low-voltage wiring. And with all this added function, they never detract from the appearance of a room. In fact, they're true decorator-styled lighting controls with all the full features of a box-mount dimming system.

The unique modular approach makes for a lot more capacity and flexibility.

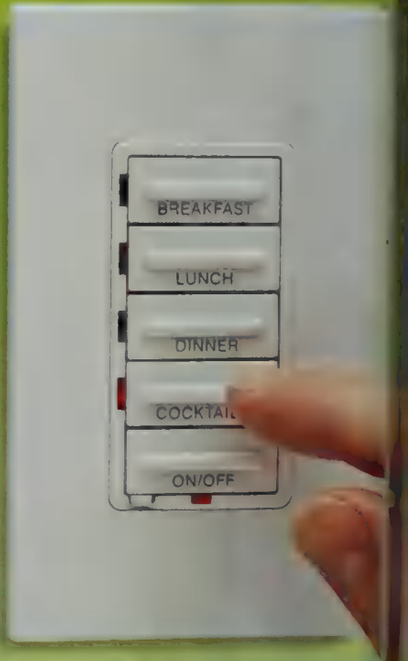
Leviton MicroDim Scene Controls give lighting designers and architects far more flexibility. Alone, the individual units provide standard pre-set dimming of one lighting load. Easy one-touch remote control of many loads can be achieved by adding Scene Select Remotes. In this way, four scenes can be chosen per Scene Select Remote just by pressing any of the four keypad buttons. The result of this modular approach permits lighting designers and architects to successfully execute their most ambitious lighting designs. For instance, with MicroDim up to 18 channels with four scenes can be provided. Incandescent, low-voltage and fluorescent lamps can be combined. Once again, thanks to Leviton MicroDim Scene Controls, the possibilities are boundless.

A world of scene dimming advantage—at about half the price!

Along with ease of installation, new operating technologies and modular flexible execution, Leviton's MicroDim Scene Controls offer another important advantage: incredible value compared with alternative approaches to scene-select equipment using dedicated low-voltage wiring. See the Leviton difference for yourself—and take advantage of new technologies in scene dimming!

For more information, contact Leviton Manufacturing Company, Inc. at 1-800-323-8920. ■

One touch o SCENE SELECT and it's cocktai time!



Elegant

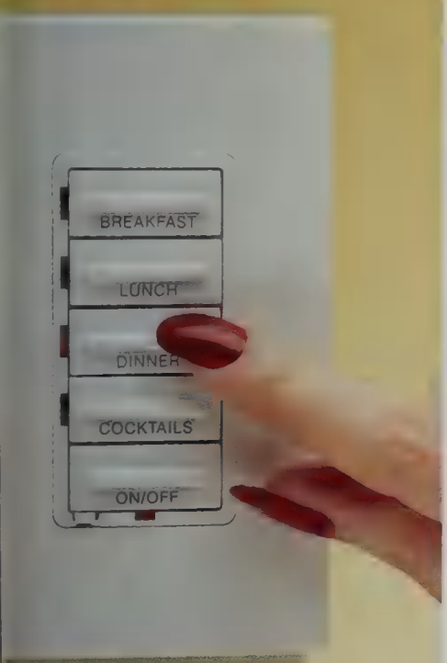
Leviton's new generation MicroDim Scene Controls are superbly functio They are also quite beautiful. These citing new box mounted scene cont devices combine the look of decora styled keypad dimmers with the mu mastering capabilities of large exper dimming systems.

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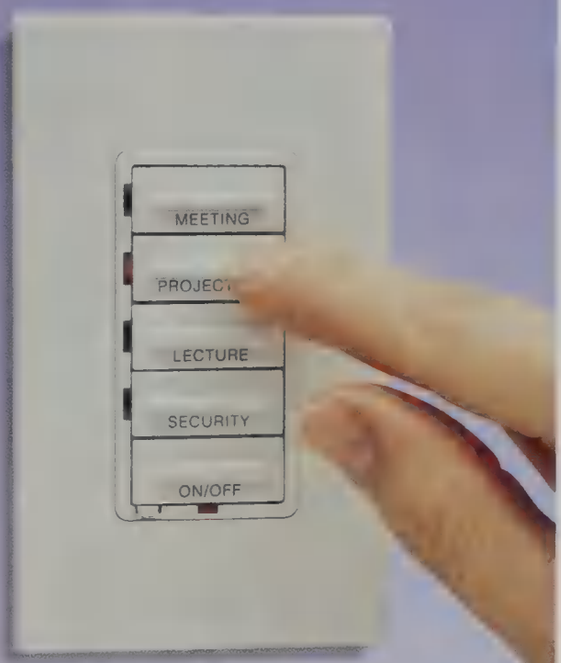
ser-friendly

on MicroDim Scene Controls make 's scene select technology user dly by eliminating bulky centralized ng control multiplexers and multiple ol switches. You can easily create inds of "moods" you want by pre- g groups of lights at various levels. ll it takes is one little touch of one switch.

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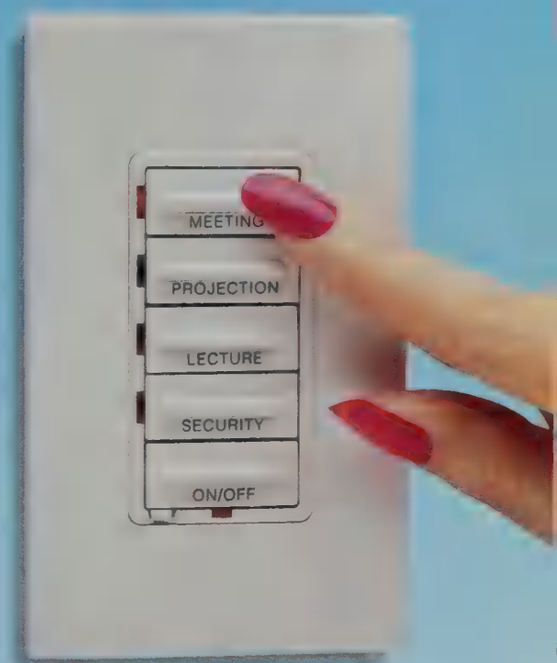
Modular

An advanced microprocessor technology is the key to our new MicroDim Scene Controls. They transmit data like a small computer network. And because they're modular, control can be tailored exactly to the number of loads being controlled. The result is greater capacity and flexibility—great news for architects and engineers.

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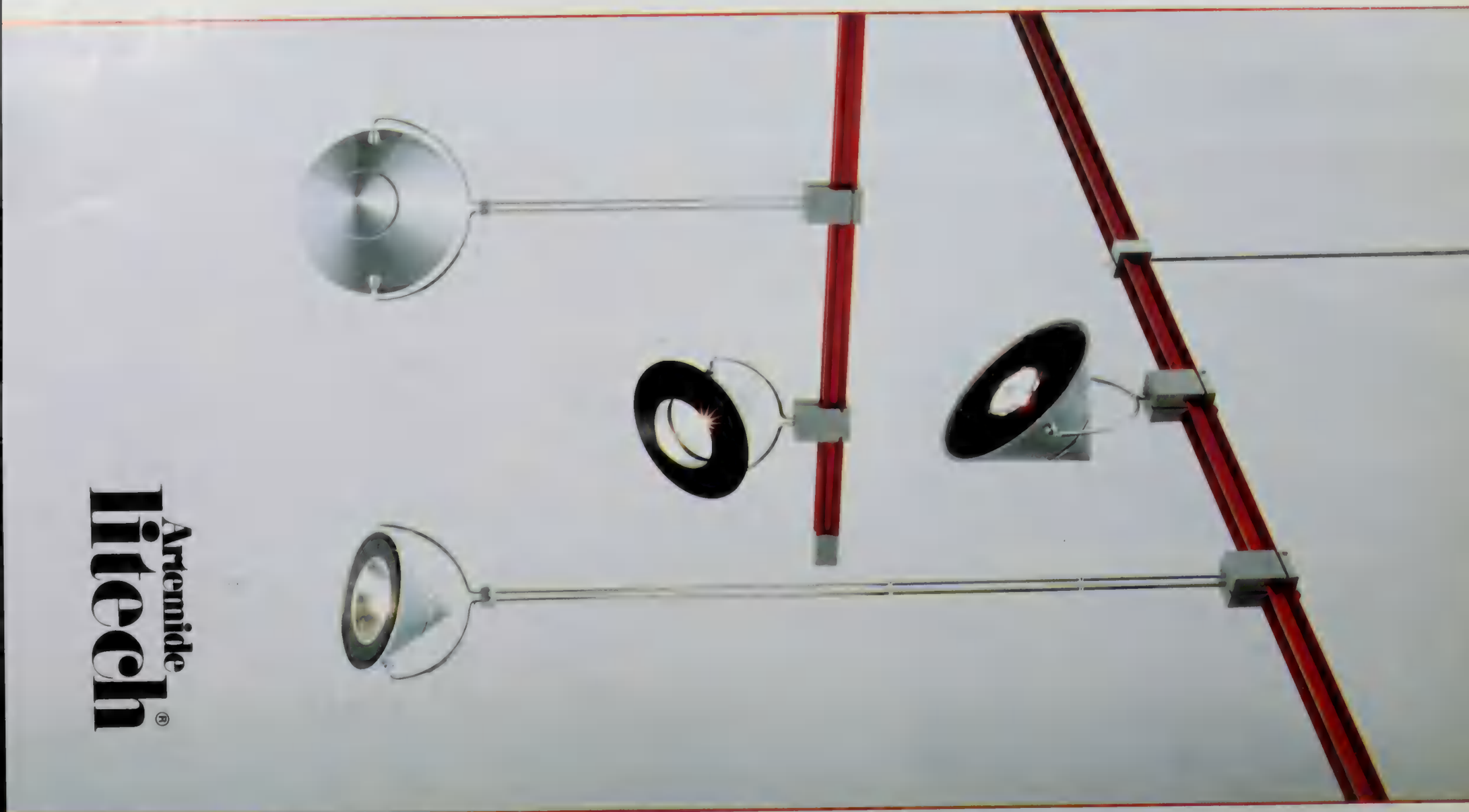
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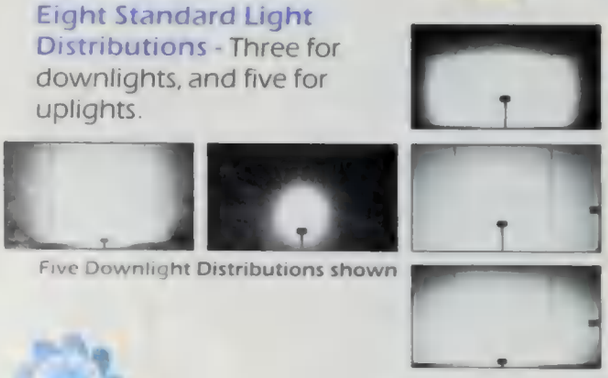
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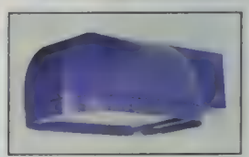


Five Downlight Distributions shown

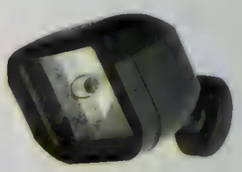
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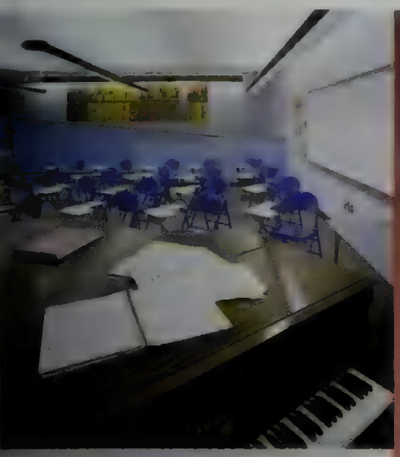




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useum Structure ters Daylight

ew Rhode Island School of Design
um addition by Tony Atkin & Associ-
dmits daylight along the tops of the
only after it has bounced off an outdoor
ce and up through a glazed gap in the
verhang; long-life fluorescents glow in
ıp after sundown. Light entering the
sided monitor bounces off a solid sus-
d baffle and up to the ceiling. The
folds along a center hinge to admit
onal daylight for less sensitive exhibits.
-mounted spots and wallwashers are
ıed to a suspended steel grid. ■



New York City

Windows as the Soul of a Landmark Railroad Terminal



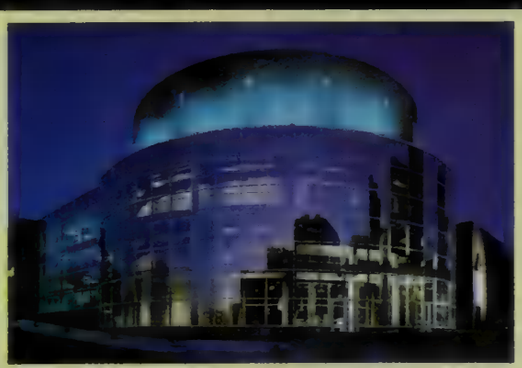
©Norman McGrath

Even after his acclaimed lighting design for Grand Central Station was complete [RECORD LIGHTING, August 1991, pages 30 to 33], Sylvan Shemitz worked on. He mounted a campaign to uplight the grand windows on the front facade, part of his original design killed by budget cuts. "It's akin to lipstick," he says, "or a diamond brooch on a plain black dress." In other words, the lighting would make the landmark come to life. Luckily, while in London, he found a poster of the Pirelli Garden at the Victoria and Albert Museum that showed the effect.

When told it was out of stock, he begged until the staff unearthed six copies that he promptly sent to officials at the Metro North railroad and the Grand Central Partnership to illustrate what he was trying to accomplish. It worked. Shemitz recently completed installing HPS luminaires—36 at 1000W, 16 at 400W, and 6 at 250W—in combinations of wide and very narrow beams, concentrating the greatest brightness on the south facade (above), the focus of a broad vista along Park Avenue. "I would have laid down in front of a train to get this done," he says. ■

h Carolina

ıhting Helps to ·n a Late dition into the ıin Attraction– d Front Door



© Gordon H. Schenck, Jr.

Hepler Hall Dahnert's OmniMax Theater & Planetarium at Charlotte's Discovery Place science museum was lighted in consultation with Odell Engineering to emphasize street-side views of projector mechanisms, exposed structure, and the momentum of large audiences regularly arriving and leaving on ramp levels. Track-mounted quartz lamps keep the interior aglow until 2 a.m.; metal halide casts a rhythmic pattern of blue-toned light and shadow on the cap until dawn. ■

New York City

Fixture Squares Off a Multi-Sided Office-Building Entry



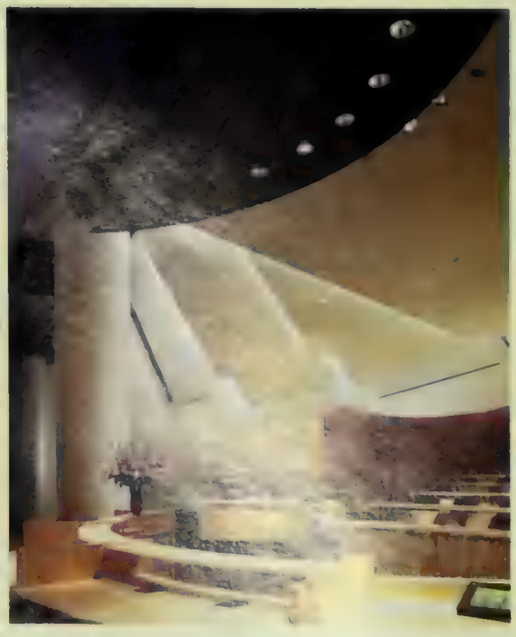
© Paul Warchol



At 477 Madison Avenue in Manhattan, Jerry Kugler Associates used a custom stainless indirect fluorescent pendant (right) as a centering device in a lobby designed by Kohn Pedersen Fox Interior Architects. The fixture passes in a straight line through the vestibule into the main lobby (left) and on to the narrower elevator lobby where it attaches itself to a wall, bouncing light up to a perforated stainless-steel ceiling as it goes. Cross-aimed recessed accent lights emphasize the patterned floor. ■

California

For the Man Who Made Grapefruit Famous



© Nick Merrick/Hedrich Blessing

For most labor leaders, "being seen in the best possible light" is a metaphor, but the board of directors of the Screen Actors Guild takes it quite seriously, especially now that they are fully equipped for teleconferenced meetings. "The cameras are on 80 people who are used to looking good," says Keating Mann Jernigan Rottet principal Richard Riveire, who collaborated with Alfred Scholze and Associates on the lighting for the new James Cagney Board Room in Los Angeles. So that no member is upstaged, 250W PAR38 spots, tucked into the overlapping planes of the acoustical interior shell, train key and fill light on every seat. Cold cathode, color-matched to incandescent, picks out the plane edges. Additional recessed PAR38s contribute to key and fill at the dais (foreground), where a one-touch dimmer box controls video and light levels. ■

Briefs

Awards, Changes, Calendar Notes

Winners

▪ Cooper Lighting has been singled out by the Environmental Protection Agency as it 1994 Manufacturing Ally of the Year. Crite included internal-lighting upgrades, promo tion of the EPA Green Lights program, innovative technology and service, and aid financing client lighting upgrades.

• The Nuckolls Fund for Lighting Educatio 1994 grant goes to Pratt Institute for its course based on lectures by professionals from disparate fields. Four new members have joined the Nuckolls board: consultant Daniel L. Blitzer, formerly of Lightolier; Enterprise Lighting Sales president Franl Conti; Spectro Lume president Daniel J. Fitzpatrick; and Patrick H. Sears, assistan exhibitions and facilities director at the Smithsonian's Freer and Sackler Galleries

Changes

• General Electric Lighting and Motorola Lighting have teamed up to market Gener Electric fluorescents and Motorola electro ballasts as a co-branded system. Agreeing that current and future markets require lamp/electronics linkages, the two also int to collaborate in developing other new ligh system products.

• Genlyte is building a new facility at the company's primary manufacturing site in Fall River, Mass., to consolidate U. S. customer service, product design, engineerin sales and marketing management, project management and order entry. The firm wi move into the new space, designed by Fall River architect William Starck, in Septem but will retain its existing space in Secauc N. J., for finance, administration, and dat operations.

• Helen Diemer, formerly of David A. Min Inc., and past president of the Internatior Association of Lighting Designers, has joi the Philadelphia-based Lighting Practice.

Dates

• The Illuminating Engineering Society o North America's annual conference takes place August 7-11 at the Doral Resort & Country Club in Miami. Call 212/248-500 extension 117.

• An exhibition on the history of the Ram busch Decorating Company continues at t Lehman College Art Gallery, Bedford Pa Boulevard West, Bronx, N. Y., through M. 28. Hours are 10 a.m.. to 4 p.m. Tuesdays through Saturdays. ■

ifornia

econd Chance for 1919 Design





seismic codes gave the University of hern California two options: tear down Parkinson's 1919 Romanesque Bovard inistration Building, or engage in a al gut rehab. The latter course allowed rchitects at Widom Wein Cohen to rein- ıce design elements that had been ıred or lost through years of modifica- pull some exterior detail into the new iors, and incorporate echoes of unbuilt ons of the original plans. "It's a lot more ical than before," says Babu Shankar of 'S Lighting. In the newly arched corridors (left), Shankar and Allan Leibow (who has since joined Candela in Seattle) concealed overlapping special-phosphor fluorescents in the cross-beam elements between pillars. A similar technique was used in an existing gap between staircase and wall (right). Off-the-shelf sconces with downlight capability, each fitted with two 13W 2700K compact fluorescents, articulate the pillars while highlighting the capitals. Pendants fitted with compact fluorescents and 50W PAR20s mark the corridor intersections and downlight the details in the floor

Germany

Negative and Positive Spaces

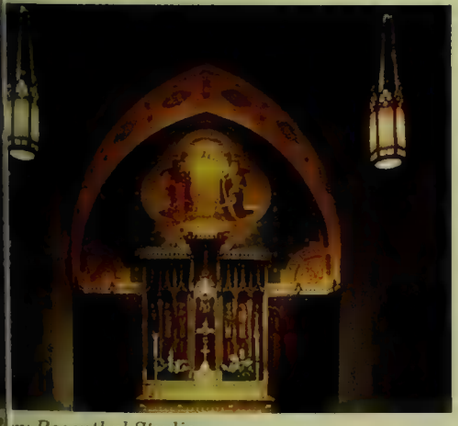
British architect Ian Richie's contribution to a 1992 exhibition on the relation of light and design has become part of the permanent collection at the Grassi Museum of Mankind and Furniture in Leipzig. The exhibit begins in a "positive space" (below) whose architecture changes with shifts in the daylight streaming through the windows; to reinforce the message, a large sunflower growing through the center of a glass-topped table (not shown in this view) tracks the sun at the south side of the room. The dark reflective surface at the right encloses a "negative space," a black tunnel covered inside with a photosensitive coating that captures images when exposed to light. A flash gun provides an initial burst of light that prints the wall with an image of the visitors—who then use "light pens" to draw and write on the walls, watch the images glow and fade, and re-enter the "positive space" with these images still imprinted on their retinas. Tunnel access is through *chicanes* that describe several 90-deg. turns to cut out light without the use of doors. The exhibit currently is in storage during museum renovations. ■



© *Ian Richie Architects*

York City

r the Greater Glory, a Magnificent andelier Goes into Storage



ry Rosenthal Studio

The first task Charles Cosler faced in lighting the chapel at St. James Episcopal Church in Manhattan was convincing the vestry that a "magnificent" central Victorian chandelier had to be replaced by four smaller pendants to provide better distribution for the congregation, uplighting for the ceiling, and, incorporated into the two closest to the altar, PAR36 spots trained on the celebrant. Within the sanctuary, MR16 spots on track concealed behind the arch and xenon strips behind the wood panels illuminate the paintings and carved surfaces. ■

Lumen Tuning: Using Ballast Factor as a Design Tool

By James Robert Benya, PE, FIES

Imagine being able to change fluorescent lamp lumen output, fixture by fixture, to suit a room or its specific design, without using an expensive dimming system. This is possible by choosing an appropriate ballast factor for the ballast used in each fixture. Using ballast factor in design is a powerful new tool.



Ballasts of various factors are now available for many different lamps.

Most architects, engineers, and lighting designers are familiar with ballast factor as it is expressed as a light-loss factor in design calculations, and use it routinely without much thought. Other light loss factors are lamp lumen depreciation (LLD), a natural process of lamp aging, and luminaire dirt depreciation (LDD), the effect of dirt collected on lamps, lenses and other luminaire parts. Both are called "recoverable" factors because the resulting illumination loss can be recovered when the lamps are replaced and luminaires cleaned. A third, less significant recoverable factor, is room surface dirt depreciation (RSDD). Together, the effect of these factors on lighting system performance is to reduce the "maintained" light levels by 20 to 40 percent from the initial levels.

There are also "non-recoverable" loss factors, which are permanent changes in lighting system performance. Unlike recoverable factors, these can be increases (factors greater than 1.0) as well as decreases (factors less than 1.0). Application thermal factor (ATF) corrects the output of lamps when a luminaire is used in cold or warm applications and is especially meaningful for fluorescent lamps.

Controlling the ballast factor

The most significant light loss factor is ballast factor (BF), a multiplier which compensates for the difference between a lamp's "catalog lumens", which are established by the lamp manufacturer using a standardized test ballast, and the actual magnetic or electronic ballast the designer specifies. Of all these factors, ballast factor remains the one over which the designer can exercise some control. Because ballasts in a whole range of ballast factors have recently become available, it is now possible for designers to "tune" the lumen output of each fixture in a space to specific requirements just by specifying different ballasts where required.

Ballast factor is used for fluorescent and HID lamps. Incandescent lamps, including low voltage, don't use a ballast. For most HID lamp and ballast combinations, the ballast factor isn't really an option and not much of a factor. Until electronic ballasts were introduced for fluorescent lamps, magnetic ballasts were designed to meet ANSI and Certified Ballast Manufacturer (CBM) standards, which call for a ballast factor of .925 for standard lamps and result in a ballast factor of .87 when used with "energy saving" lamps. There were few other options. Most designers automatically use one of these values in design calculations. When electronic ballasts came into widespread use, establishing ANSI standards was difficult, and the ballast factor for each product was left to be determined by its manufacturer.

Within certain limits, there is nothing wrong with having different ballast factors. Fluorescent lamps exhibit relatively linear power-to-light output, so system efficacy measured in lumens per watt (lm/W) doesn't change within a fairly large range around nominal output. For instance, an electronic fluorescent lamp/ballast system will generate about 80-90 lm/W regardless of whether the ballast factor is .70 or 1.25. This is not true of HID or incandescent lighting. Both need to operate at nominal rating to achieve maximum lumens per watt.

Under-driving fluorescent lamps for reduced light output is fairly common. Some electronic ballasts achieve sensational energy savings because their ballast factors are only .70 to .80. Unfortunately, ballast makers have failed to call attention to this fact, a many U.S. utility companies will not giv rebates for electronic ballasts with balla factors less than .85. This represents a l opportunity for the utilities because, as sidebar shows, these very-reduced outp ballasts are excellent choices for mainta existing lighting levels when performing common T12 to T8 conversions using la for-lamp replacements.

The principal concern when under-drivi lamps is shortening the life of the electr which are used to start the lamp. Design who specify ballast factors below .80 sho use rapid-start ballasts with a separate e trode heating circuit.

For normal operation and over-driving, seems to be a general consensus that ins start ballasts are suitable. Normal light output (ballast factors between .87 and is the effective standard of the industry, most electronic ballasts operate lamps i range. To overdrive the lamp, ballasts w factors of up to 1.28 are presently on the market. One manufacturer has introduc 36W T8 lamp, the FO36, designed speci to be operated at higher light output, although lamp companies now seem to a that the standard 32W T8 can be over-d to achieve the same result.

Effect on lamp life

A major concern is whether the lamp wi have normal performance and lamp life operated at power levels other than nor In particular, T8 lamps are fairly tolera over- and under-driving, and within rea able limits there should be no noticeable change in lifespan. T8 lamp life is more dependent upon starting method (rapid instant-start, etc.) and the hours per sta

James R. Benya is the director of lighting and daylighting for Proven Alternatives, Inc.

choosing ballasts with varying ballast factors, you can vary light-tput levels within a single room—and the lighting levels stay put n when the room is relamped. Imagine the possibilities!

ant-starting is assumed to age lamps e rapidly than rapid-starting, so at 3 rs per start, manufacturers' lamp-life ngs will be reduced by about 25 percent.

0 hours per start minimum, lamp life ıld not be affected, regardless of the ting method used. Where frequent ching is a reality, as it may be where ıpancy sensors are in use, rapid-start bal- may be the answer. They are available virtually every ballast factor.

at potential

potential for tuning lamp lumen output ıit is the practical application of ballast ɔrs. Since ballasts seldom burn out, the grity of the design is maintained when mping occurs, because all the relamping be done with the same lamp. Spaces are ɔverlit simply to make use of a standard ɔ or luminaire in rooms that vary by size task.

opportunity to use ballast factor as a gn variable can make lighting designs e energy efficient. The FO32T8/RE70 ɔ, for instance, has a catalog lumen ut of 2900 lumens, but with the range of ıst factors on the market, the lamp can erate anywhere from 2100 lumens to 3700 ns at about the same efficacy. The slight-gher lumen output of the FO32T8/RE80 ɔs offers a slightly-higher output range, een 2200 lumens and 3900 lumens.

same idea appears to have been used in lesign of the electronic ballast for the rel-ly-new 8-ft T8 lamp (FO96). However, use the FO96 lamp is an instant-start gn; ballast factors are all above .80. At ent, ballasts with factors up to about 1.0 ıvailable for these lamps, but it is expect-ed that super-light versions with higher ballast factors will be marketed shortly.

These same variations, to a lesser extent, are available for other lamps. The rest of the T8 lamps, such as the FO25 (3 ft), FO17 (2 ft), FBO31 (2-ft U with 3-in. legs), FBO32 (2-ft U with 6-in. legs), FO40 (5 ft) can take advantage of most of the various ballast factors. Ballasts with different factors are also available for biaxial lamps and quad-tube compact fluorescent lamps, although these seem to be variations between different manufacturers' products rather than having been designed with lumen-tuning in mind. In addition, ballasts with various factors are also available for T12 lamps, although they may become hard to find because of the increasing popularity of T8 lamps.

A typical-use design problem

Office buildings tend to utilize lensed or louvered troffers as the building standard for general illumination. Many of these are now three-lamp luminaires, to take advantage of double-level switching through master-slave ballast connections required by California's Title 24 and also a fairly popular idea elsewhere. The most common lamp/ballast configuration uses F40/CW/ES 34W lamps and magnetic, energy-efficient ballasts.

A typical 100 sq. ft. office requires two troffers. With standard 3-lamp fixtures maintaining 50-60 fc in an empty room, the resulting lighting power density would be 2.16W/sq. ft. Using FO32/RE80 lamps, picking a ballast factor of about 1.05, and taking advantage of the other benefits of T8 lamps with electronic ballasts (i.e., better LLD, more efficient fixtures, and slightly better ATF), the same illumination criteria can be met with two 2-lamp luminaires at 1.32W/sq. ft. For open office illumination, the same building would typically use 3-lamp luminaires on 64 sq. ft. spacing at 1.68W/sq. ft. By choosing two-lamp luminaires, FO32/RE80 lamps and a ballast factor of .95, the design criteria are met at 0.98W/sq. ft.

Retrofit considerations

One of the most common retrofits is the conversion of 4-lamp lensed troffers to T8 lamps and electronic ballasts. In a lamp-for-lamp replacement maintaining existing light levels, magnetically-ballasted F40CW/ES lamps can be replaced with FO32 lamps and VRLO ballasts, and the result will be within a few percentage points of the original light level. The existing power (160W with older ballasts and 144W with energy-saving types) is reduced to around 100W per luminaire.

In delamping projects using specular-imaging reflectors, it is necessary to use a VSLO ballast along with the reflector to maintain the same light levels when going from 4 lamps to 2 lamps, resulting in about 86W per luminaire. In some situations where a slightly lower light level is acceptable, SLO ballasts can be used to achieve a final load of about 76W per luminaire.

Someday: variable ballast factor?

Almost all ballast manufacturers have ballasts under development that will allow the ballast factor to be tuned on-site. But until these are available, lighting specifiers can still use ballasts of differing factors in carefully chosen locations to put light where it is needed, and save plenty of energy.

And isn't sensitive, energy-conscious lighting design really what it's all about? ■

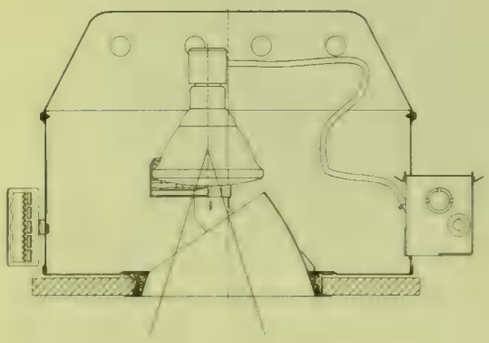
A rating system for electronic ballasts

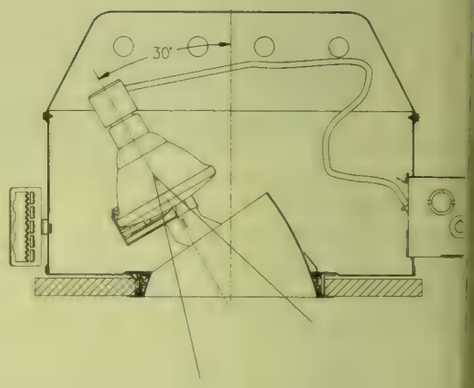
In order to catgorize ballasts for competitive specifying, the following classification system is recommended for 4-ft, full-output (FO) 32W T8 lamps. This will allow competitive bids from most of the major ballast manufacturers.

Light output	Very Reduced	Reduced	Normal	Super	Very Super
Abbreviation	VRLO	RLO	NLO	SLO	VSLO
Ballast factor range	.70 to .79	.80 to .86	.87 to 1.03	1.04 to 1.20	1.20 to 1.30
Ballast input power	.73 nominal	.83 nominal	.92 nominal	1.18 nominal	1.28 nominal
Power per FO32 lamp	25W per lamp	27W per lamp	32W per lamp	39W per lamp	43W per lamp

Open-Architecture Lighting

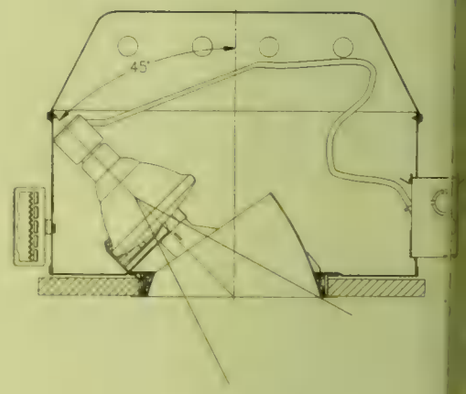
After years of use and thousands of units had widened the tolerances, Lightolier had to retool the dies for their Calculite recessed fixture. Before that investment, the specification-downlighting product-development people in Secaucus did what market-driven companies are supposed to do: they asked questions. Lighting designers, architects, electrical contractors, facilities managers, and others connected with lighting design, installation, and maintenance suggested changes, which have been incorporated in Pro Spec, an adjustable recessed accent light and wallwasher for incandescent sources.







1



John Nadon, manager of specification downlighting at Lightolier, sees selection—from within a wide range of standardized components—as the new luminaire line's real strength. Everything is modular, including the transformer, the lamp socket, the reflector, and accessory lenses, and parts snap together via prewired plugs, without hard wiring. Fixtures are assembled as and when specified from these stocked components, for low-voltage, line-voltage, and metal-halide sources, with the appropriate reflector for the job. Transformers, where required, are not fixed or attached to the frame: they, too, are plug-ins, easily removable from below. An offset centering pivot (middle, exploded view (1), and diagrams) permits exactly centered, on-site beam direction, even at angles of 45-deg. for wallwash applications. Two easy-to-engage cams hold the lampholder in place where aimed (2); relamping does not effect the focus. Across the ceiling, both accent and wallwash configurations look the same. Even the 500W PAR56, a source specified by lighting designers for large lobby spaces needing a powerful lamp, but one some architects dislike for its large aperature, fits into a 7 1/2-in. opening.



2

Pro Spec will be shown to lighting designers at Lightfair on an "available for specification" basis. To be marketed as an extension of the Calculite line, the fixture will be offered in both a basic model, adjustable for a single source, as well as the completely modular, kit-of-parts version, where each component is called out to meet the specific lighting requirements of a particular space.
Lightolier, Inc., Secaucus, N.J.
Circle **331**

Workstation Illumination

elcase has expanded its office-lighting ily still further. After starting with attrac-, free-standing desk lamps in the late '80s, office furniture manufacturer moved on artition- and wall-mounted uplights, eloped with Peerless Lighting Corpora-. At Lightfair, Steelcase will introduce a d generation of lights: undershelf- unted fixtures intended to supply e-free, comfortable task illumination that ts different control, light-level, and get requirements.

core products are styled the Advanced, ndard, and Utility models. (A top-end sion, the Prescription, intended for extra- nsive VDT applications or for those with cific vision problems, will be introduced r this year.) Common features across the line include a shallow, 1 3/4-in. profile tated by the depth of the transformer), a ped reflector, T8/triphosphor lamping, daisy-chaining capability that permits ning up to eight fixtures from a single et. Within the line, each model has dis- tive features. The Advanced has an lic optics sleeve or lens that surrounds lamp tube and directs light to a specular- ninum reflector. This light in turn is stributed over the desk top without glare tion). Steven Eldersveld, lighting-product ager for Steelcase, describes this model eing particularly useful for people whose k is stationary and intense, for eyeglass ontact lens wearers, and for older kers who may need a higher footcandle l on the task. The Advanced comes with lectronic ballast, and can be ordered with nmer (1).

Standard provides a measure of aimabili- ith a silkscreened sleeve that can be ted to direct light where wanted on the top or against the back wall. Electronic sting is an option; the reflector has a e finish (2). The most basic configuration, Utility, comes with a magnetic ballast and t, acrylic diffuser; it is suggested for lay and non-work surfaces (3). Fixtures e ordered in 24-, 36-, and 48-in. lengths. are shipped furnished with a 3500K fluo- ent bulb to match.
lcase, Inc., Grand Rapids, Mich.
le **332**



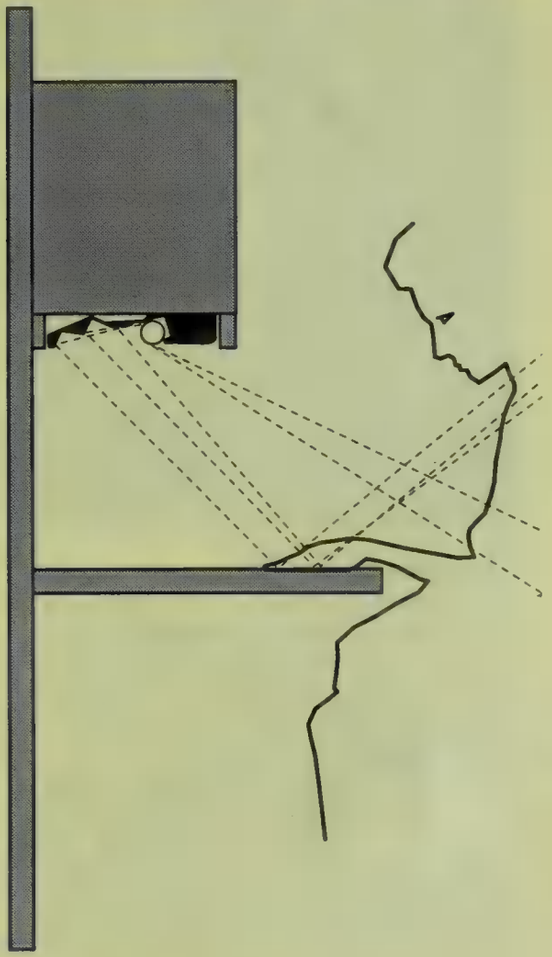
1



2



3



Smaller and more precise—lights for cupboards, campus, safety, and display



333

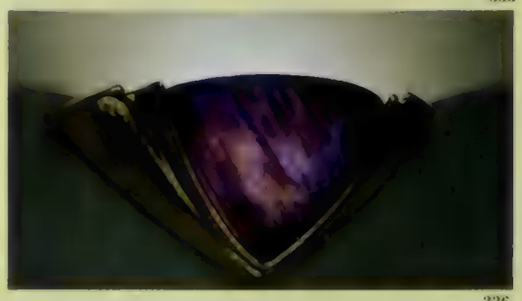




334



335



336



337

333. Like a sail
A 15-in.-high table lamp, Nautilus has a serigraphed plastic shade in white, red, yellow, blue, green, or gray shielding a 60W bulb. Design: M. Barbaglia and Marco Colombo. Italiana Luce USA, Stratford, Conn.

334. Public-area lighting
The vertical orientation of the Vandal Guard fixture is said to offer a smaller target while presenting a more attractive profile. Takes a 175W metal halide; acrylic lens; segmented reflector. Sixteen color options. Architectural Area Lighting, La Mirada, Calif.

335. Unobtrusive emergency fixtures
A self-contained line voltage decorative luminaire that switches automatically to backup Ni-Cad batteries when AC current fails. Meets state and local emergency-illumination codes. Diverse-A-Lite, Boston.

336. Stained-glass luminaire
Colorado sconce combines a welded-steel frame, ceramic body, and an art-glass diffuser kiln-formed in a compound curve. UL listed for incandescent and compact-fluorescent sources. List price: $178. Derek Marshall Lighting, Sandwich, N.H.

337. Parking-garage lighting
The PGL2 uses optional louver modules t control brightness and allow site customiz tion, providing a secure lighting environm without creating a "cave effect" or light p tion. Cast-aluminum and borosilicate g lo parts are sealed against moisture and approved for power-spray washing. Kim Lighting, City of Industry, Calif.

338. Miniature low-voltage track
A single, 3/4-in.-high strip can be used fo linear undercabinet and cove lighting as w as halogen spotlights. Xenon bulbs are di

n across-the-board survey of new lighting—many to be seen at ightfair—shows up lots of line extensions, new mounting options for w-voltage spotlight systems, and still more miniaturization.



339



340



342



341



343



344

© Rick Mariani

ble, and can be placed anywhere along the ck. Connectors allow the track to turn ners. Juno Lighting, Inc., Des Plaines, Ill.

9. Outdoor lighting source

ew JJI Lighting division makes UL-listed ures for many architectural and landscape lications. Line includes historical stan- ds with acorn luminaires, above, as well as h, garden, and facade fixtures. Architec- al Landscape Lighting, Santa Ana, Calif.

0. Articulating-arm task light

Valencia parabolic-louver task light now ies with an electronic ballast built into its sleek lamphead in black, gray, teal, and red. Waldmann Lighting Co., Wheeling, Ill.

341. New track for a halogen classic

A track version of the Porsche-designed Mikado LV system permits positioning of spotlights anywhere on the conductor profile. Spots snap on and off; a rod extension option allows flexible placement of the lampheads. Artemide, Inc., Farmingdale, N.Y.

342. Museum-quality system

A moderately priced, easy-to-install version of spots and wallwashers designed for major museums, the SightLine has a powered, extruded track capable of long spans. Maxima 30 fixture pictured is a smaller-scale version of larger gallery fixtures. Edison Price Lighting, New York City.

343. Dual-function pendant

The Orion luminaire comes wired with two circuits, for separate control of ambient uplighting and MR-16 downlighting. Boyd Lighting Co., San Francisco.

344. Energy-saving exits

The Quantum exit line now includes LED and low-initial-cost fluorescent versions. Lithonia Lighting, Conyers, Ga.

Northern Lights: New Lighting Technology From Canada

Get ready for two innovations from Canada: the electronic ballast for white HPS that everybody's been waiting for, and bright, white light that's generated by—get this—microwaves!

by Lindsay Audin

NAFTA has drawn attention to several innovations in lighting technology from north of the border sure to make a mark on the design scene in the States. Here's a quick look at two new technologies.

Electronics Meets HID

The creation of fully electronic ballasts, including some which may be dimmed, provides new options for compact HID lamps, such as Philips' White SON. Made by Etta-Naroma Industries, a division of the Toronto-based Energy Services Group (ESG), they power 35W "white" HPS lamps, and metal halide lamps between 35W and 70W.

About as big as a thick slice of bread and weighing about a pound, the ballasts fit into a track light (also made by Naroma) about 6 in.-by-3 in.-by-4 in. That's one third the size and an one eighth the weight of its magnetically-ballasted ancestors. Rumor has it that the price will also be quite competitive. ESG, an energy services company managing and financing energy efficiency upgrades, has just completed installation of 1700 of the fixtures in Canada's Hudson's Bay retail chain.

A good way to retire incandescents

Because of their warm color, high color rendering, and high efficacy, white HPS lamps have often been considered as ideal replacements for incandescents in merchandising applications. The enormous magnetic ballasts previously required were a severe limitation, however, because few ceilings were strong enough to hold multiple 9-lb. track heads.

While anecdotal verification is lacking at this time, Naroma claims that its ballasts will hold lamp color and improve lifespan, the other banes of white HPS. Its tests indicate that color will remain within 100K, and lamp life may be stretched to 15,000 hours, 50 percent beyond rated life—welcome improvements for lamps that cost over $30 apiece.

Mr. Audin is lighting consultant to E-Source, an energy consulting firm, and energy manager for Columbia University.

These developments are not far from the U.S. marketplace. The 35W ballast was UL-listed last December, and the other versions are expected on the market this summer. Naroma's products are being considered for other use in a major U.S. manufacturer's fixtures later this year, and Philips is eyeing them as a way to promote use of its HID lamps. Naroma has not, however, confined its efforts to Philips' line: its ballasts will also handle Iwasaki, Ushio and Osram/Sylvania.

And now, into the 21st Century

Another Canadian innovation involves a mercury-free HID lamp that would be appropriate for Buck Rogers' backyard. Using high frequency microwaves at 2.45 GHz (2.45 billion cycles per second), Hutchins International Limited's (HIL, of Mississauga, Ontario) lighting system creates a plasma of free electrons and nuclei from atoms of sulfur, argon, and other gases. When the electrons change energy levels, they emit photons in the visible light range. No phosphors or electrodes are involved.

This method was pioneered by Fusion Systems, Inc., a Maryland-based firm that used a slightly different gas mix to generate high levels of ultraviolet light for industrial processes in the late 1980s. HIL's 3400W VBL-3400 is the first commercial microwave lighting fixture and is designed to illuminate large areas such as stadiums. Both companies plan to unveil high-profile installations in 1994, with Fusion Systems demonstrating its technology at the National Air and Space Museum in Washington, D.C.

Second generation

The microwave lamp is an air-cooled glass sphere, one inch in diameter, spinning in an electric field created by a computer-controlled magnetron, much like the energy source in a microwave oven. This form of energy transfer opens the door to very high efficacies, potentially producing 200 lm/W of 85 CRI, 6700 K light in a relatively small package. Early versions produce only 68 lm/W, equivalent to a magnetically-ballasted fluorescent lamp, due to losses in the magnetron. HIL says its next generation will cut total input watts by 20 percent, yielding 96 lm/W, equaling metal halide and the most efficient fluorescents.

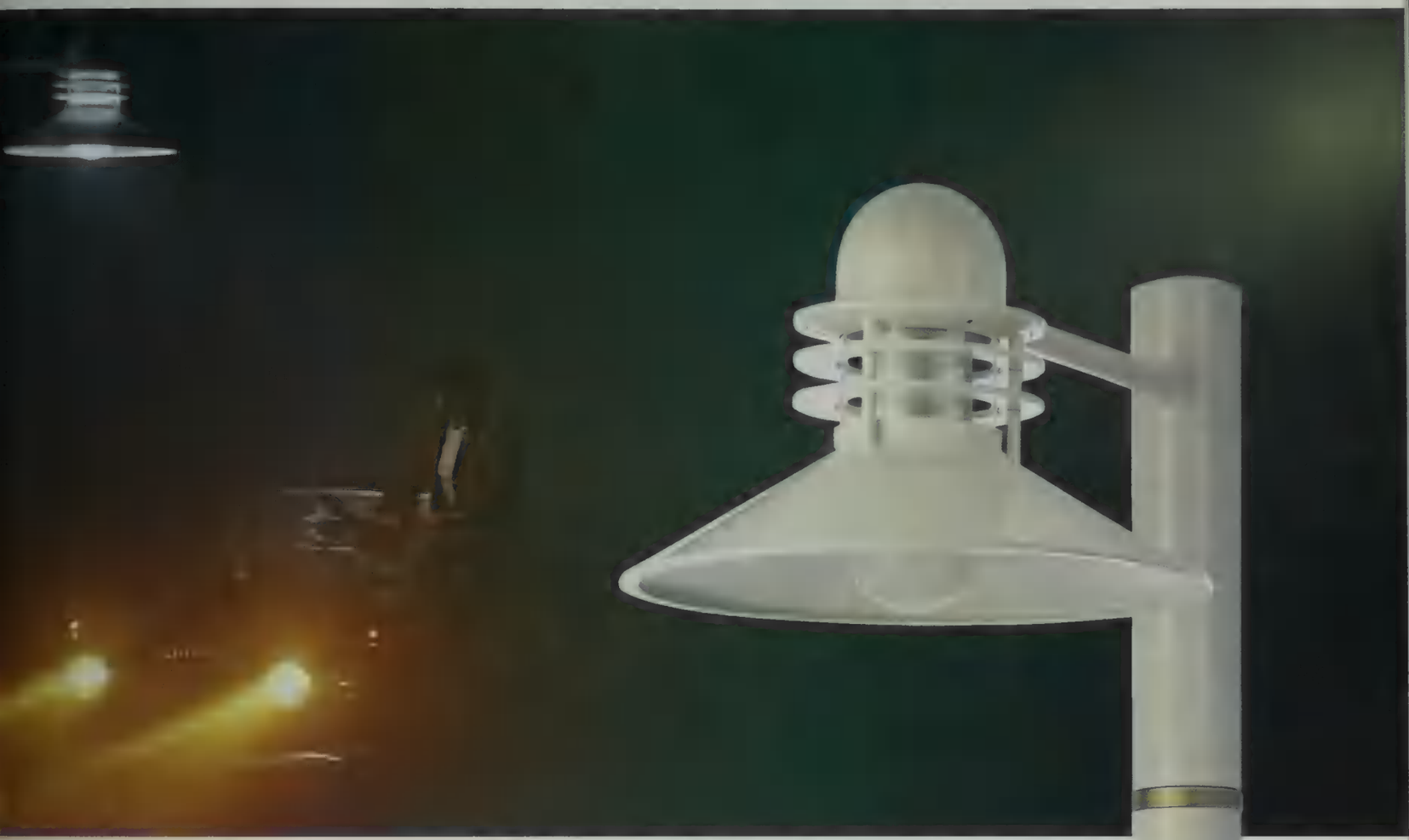
Unlike the HID lamps it is sure to replace, the microwave system can be fully dimmed and has 10-second startup and restrike time. The lamp can be expected to shine on indefinitely, since there are no electrodes or phosphors to wear out. The replaceable magnetron presently lasts about 10,000 hours, and HIL provides it with a 2-year warranty.

The future also looks bright under microwave lighting for other reasons. The absence of mercury and phosphors, which may soon require special disposal methods, avoids an environmental problem. Adjustments to the gas mix nearly eliminate ultraviolet and infrared emissions, making this source ideal for illumination of sensitive products and artifacts. And unlike fluorescent, mercury vapor and metal-halide lamps, microwave-based light radiates across the entire visible spectrum instead of creating "spikes" at several wavelengths. With its very high color temperature and CRI, a daylight-like light is created.

Spreading the good stuff around

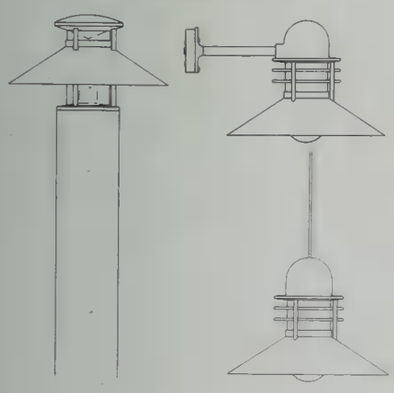
HIL is also active in fiber optics and is planning ways to combine the two technologies. In new construction, microwave lamps could be the nighttime supplement to optical collectors that gather sunlight and spread it throughout a building via light-transmitting pipes and fiber optic cables. The result would be a centralized lighting system with practically no wiring, providing very high-quality light day or night. Such developments from Canada promise to extend the boundaries of the "land of the midnight sun." ■

Nyhavn - Innovation and Tradition Combined



Nyhavn Post

The Danish architect Alfred Homann has designed four new fixtures in the popular Nyhavn series: Nyhavn Post, Nyhavn Wall maxi, Nyhavn Bollard and Nyhavn Pendant maxi.



The fixtures are designed and developed on the sound and fundamental principles that characterize the Nyhavn series: timeless and functional lighting in an original and consistent design which provides a shaded, downward light. All together, the fixtures will provide new options for lighting solutions – indoors and out.

For further information please contact Poulsen Lighting, Inc.

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A fact that carries a lot of weight. Especially considering lighting can account for up to 50% of your electric bill. What's more, when you combine those savings with utility rebates, your system payback period will be reduced even further.

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The Precise LED Exit.



Not Just Another Pretty Face.

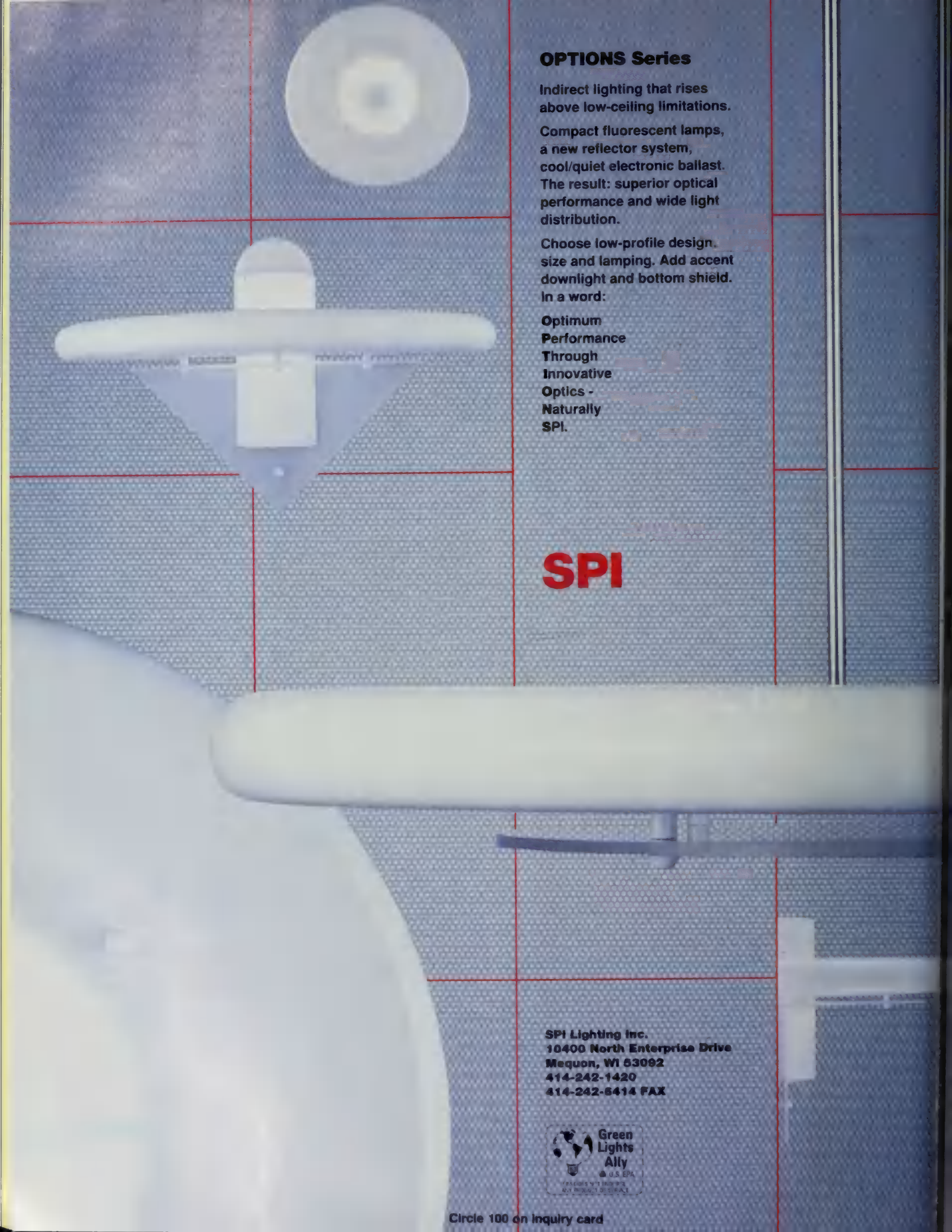
Although the Precise LED exit sign is clearly beautiful to look at, it's more than just a pretty face. Its true beauty comes from within. Consider the long life and low energy consumption of LED lamps.

- 25 years of lamp life
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R I O N

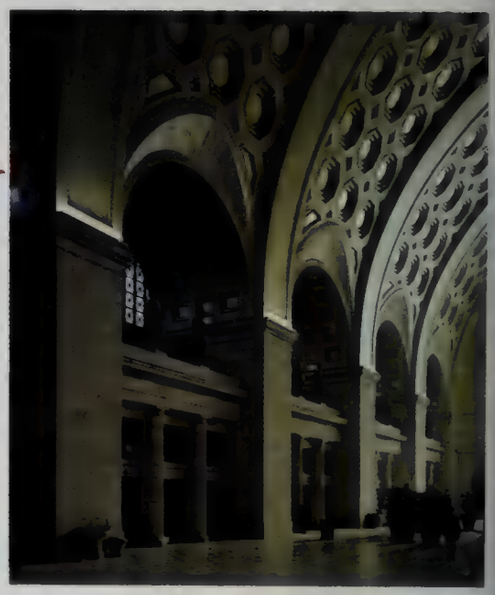
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From Showman to Medicine Man

I don't recall ever using this page to comment on the work of an individual lighting designer. There are, after all, lots of lighting designers doing good work out there, and that commentary is done best in the other editorial pages of this magazine.

But when we chose Le Bonheur Children's Medical Center (pages 30 to 35) as the cover story for this issue, it occurred to me that no one who has submitted projects to me for publication over the past eight years has presented a fresher, more varied group than Children's lighting designer, Craig Roeder.

I've published no one more often than Roeder. He has had something like eight feature stories, and five covers, including a gallery/residence (with control systems complex as a NASA project's—that worked), and an amazing Oldsmobile showroom in Dallas so saturated with color and highlights that a slide of it never fails to evoke an audible gasp from audiences when I show it during lectures. His work consistently delights, and he delights in sharing it.

Craig Roeder is a flamboyant person—a showman, really. His earlier work, like his personality, challenged; it made some people uneasy. His later work in health care (RECORD LIGHTING, May 1992, pages 56 to 61; August 1993, pages 26 to 31) shows a quiet empathy for those who are unwell; it is appropriately subtler than the car showroom, but is still cutting- edge technologically, and saturated with the deep colors he says have the power to aid healing. Please enjoy his latest amazing project. *Charles D. Linn*

nufacturers' Sources
ed on page 52

Dance of Healing



Le Bonheur Children's Medical Center
West Patient Tower
Memphis, Tennessee
Craig A. Roeder Associates, Lighting Designer
J. Wise Smith Associates, Architects

ren should not suffer. Children should not die. When new parents
m of places to visit with their sons and daughters, a children's
ital must appear only in the nightmares. Yet after a child has
sick a long time, perhaps exhausting the skills of a string of
ors, or is suddenly struck gravely ill, the special hospital for chil-
offers a chance for hope. Comfort and reassurance are natural
s for the design of such a place. Play, curiosity, humor, and
der belong there too.

long ago, most hospital administrators thought little of such
gs, if their buildings are fair evidence. An institutional formula
ped stereotypes on hospital architecture and lighting design. The
r was reduced almost entirely to calculation. Efficiency, sterility,
uniformity reigned, free from the apparently needless complica-
of subtler values. Ironically, impersonal forces now drive many
itals to make their buildings more humane and personal. Subject-
fierce competition and the prospect of politically imposed reform,
inistrators call on all possible means of survival. Specialty centers
cancer and children's hospitals are working to attract and keep
customers for outpatient treatment and preventive care.

new entry and circulation spaces of Le Bonheur Children's
lical Center in Memphis show how high design can reach in the
ent economic environment. Lighting designer Craig Roeder was
wed a creative romp for which the budget was enlarged, not cut.
my fifteen years of lighting design, this is the most exciting
ect I have ever done," Roeder says. "My only regret is that the
tographs cannot show all of this moving." Programmed con-
lers keep light in constant animation, using soft dimming cycles
er than sign-style flashers. Rainbows ripple up the tops of
mns rising in the atrium. Fiber-optic stars twinkle from color to
r. And in a tunnel to the parking deck, an ocean of blue, green,
purple neon waves rolls under a glass block floor.

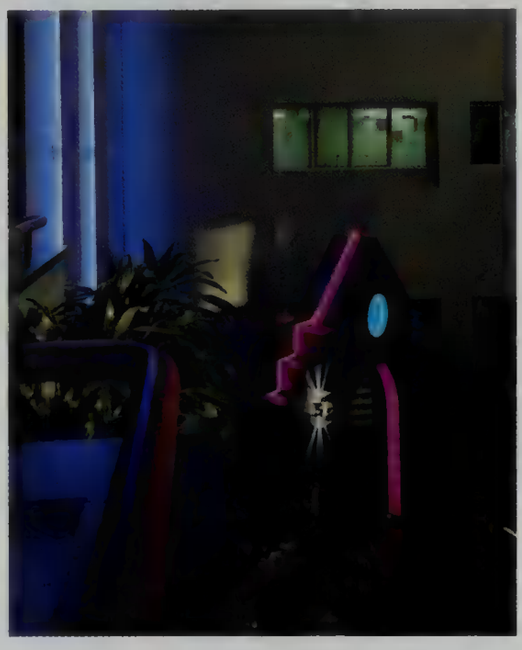
fantasy began with a mundane requirement. Le Bonheur didn't
t to buy a cherry-picker to maintain lighting equipment in its
e-story atrium. That led Roeder to choose his primary light
ces: neon and cold cathode. Both shine for years without mainte-
e when properly installed. Roeder also specified about a mile of
-optic cable, which needs no maintenance at all. The quarter-inch,
k-shielded bundles are laid out in swirls and glued into the ceiling
vall. The array runs back to 22 metal halide illuminators with
ing color wheels, installed on the third floor at step-ladder height.

ıty 50-watt halogen accent lights are mounted in low-ceiling
s, and to complete the atrium lighting, four 350-watt halogen
ghts set awnings aglow. Roeder calculates the energy use of the
e atrium system at just 0.9 watts per square foot during the day
0.72 watts per square foot at night. But that's not how he knows
lesign has met its goals. He knows because he sees adults and
ren lie or lean back together under the atrium sky. He knows
use he hears a hospital administrator tell of watching a small
nt scamper onto the shimmering glass ocean and dance.
th Fenley

th Fenley is a freelance writer based in Atlanta.

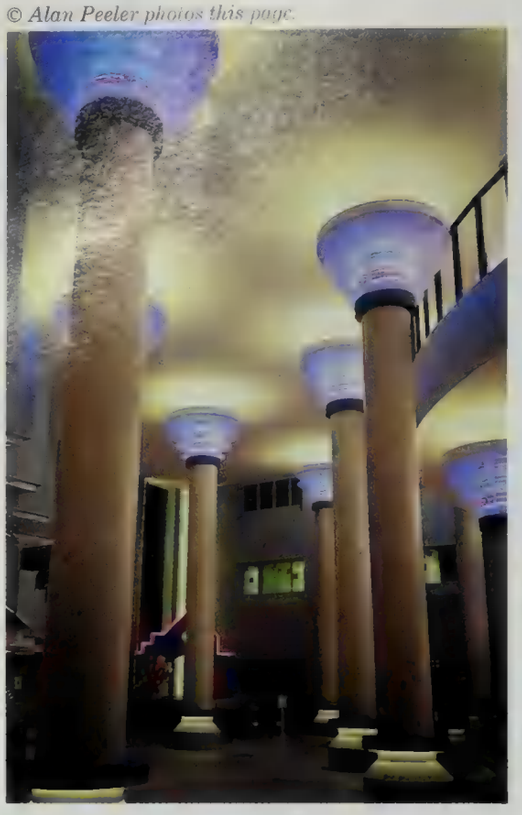
© *Robert Ames Cook photos, except as noted.*

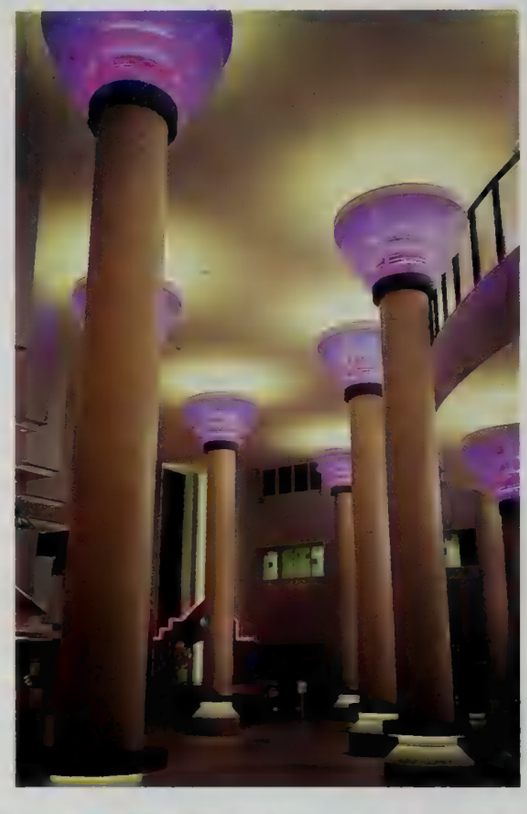




In constant motion, the dancing lights of Le Bonheur Children's Medical Center may inspire either quiet thought or delighted play. In the porte cochere (top), an entry tunnel, elevator lobbies, and especially the fantastic atrium with adjoining cafeteria (opposite), Craig Roeder has created unusual lighting effects that families can share. Like a crayon line, neon sketches the eccentric information desk (above). The collage of shapes and colors offers a measure of healing relief.

© Alan Peeler photos this page.









Not just [illegible] approve a design this bold [illegible] but then, not just any designer [illegible] "I have the benefit of [illegible] projects using colored [illegible] Roeder, "so I can present photos that show similar effects." Roeder also showed the Le Bonheur client team neon tubes and a fiber optic illuminator and cables. That presentation and his drawings were enough to win a green light.

Up Close

The special effects. This is a hospital, not a casino. Still photos unfortunately fail to capture the slow, gentle play of color on the atrium ceiling. To achieve the effect, a neon specialist fine-tuned a complex dimming sequence and permanently programmed it into a custom-built controller. His palette: red, yellow, and blue neon. The column capitals of sandblasted plexiglass hold exposed rings of all three colors. By turning on the primary colors one by one and in combination, the program mixes up a full rainbow. One capital is mounted just 6 feet above floor height so children can get a look at how it works. Concealed atop the columns are two alternate sources of indirect light. Bright white 3200K cold cathode lights the ceiling daytime to balance the luminance of tinted windows. During the night, deep purple neon spreads a mysterious backdrop for 2000 fiber-optic stars. The switch between white and purple occurs not just in the atrium, but throughout all public spaces where indirect coves appear. Cold cathode rings around column feet, guarded by frosted plexiglass, remain on constantly to satisfy emergency egress requirements.









The ocean floor (right) turns a humble tunnel into an enchanting passage. An eight-scene dimmer Roeder calls a "wave machine" animates neon under the glass block. Carnival-style games with moving balls have been installed in the two kiosks. Corridors and the cafeteria (left) are shown here with coves turned to the white daytime setting. The table downlights are 50-watt halogen PAR 20 fixtures.

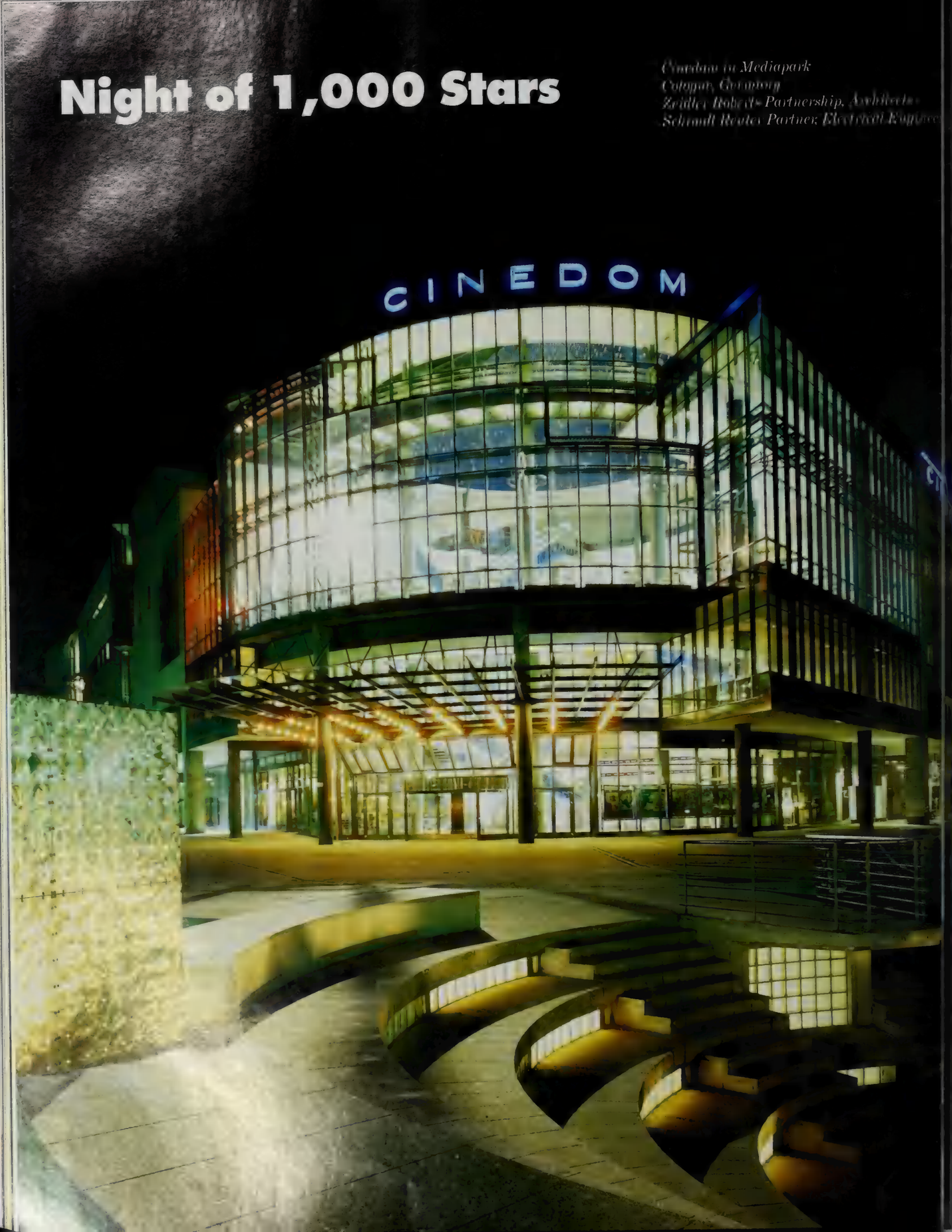
Credits

Le Bonheur Children's Medical Center
West Patient Tower
Memphis, Tennessee
Owner: *Le Bonheur Health Systems*
Architect: *J. Wise Smith Associates (project architect)*
HKS Architects (schematic designers)
Lighting Designer: *Craig A. Roeder Associates—Craig A. Roeder and Robert L. Oakes*
Electrical Engineer: *Arc Electric—Jim Fletcher*
General Contractor: *Martin Cole Dando + Robertson*



Night of 1,000 Stars

Cinedom in Mediapark
Cologne, Germany
Zeidler Roberts Partnership, Architects;
Schmidt Reuter Partner, Electrical Engineer



Cinedom, designed by Zeidler Roberts Partnership, is a multiplex vie theater that anchors the Media Park, in Cologne, Germany. dia Park is a mixed-use development, also master-planned by der Roberts, which abuts the existing city fabric, and is about a minute walk from downtown Cologne. The building is on a semi- ular plaza with several other buildings meant to attract dia-related endeavors, like television production companies, and e residential space on the top floors, retail on the ground floors, office space in between.

ltiplex theaters are just starting to catch on in Germany," says gn architect Jurgen Henze. "Most of them are being built in the urbs, so this inner-city theater is kind of exceptional in a way. Our nt is actually a movie producer himself, with one foot in Holly- d, and the other in Germany, so he was interested in our creating sually exciting, Hollywood-type approach, and that was part of the me of different parts of the building. A lot of people had kind of en up going to the movies for whatever reason, so we wanted to ate a place that is an interesting experience in itself, a place where ple can see other people, and be seen. Not just to see the movie go home again." Restaurants, bars, and shops are also located in the building.

movie-going experience begins outside on the plaza, as patrons er the central rotunda of the Cinedom, located next to a fountain t of tiers of backlit glass block and masonry (opposite). The nda borrows elements from traditional movie palace entrances to ome an overscaled marquee in itself: exposed incandescent lamps e the structure radiating out from the canopy over the entry, and -story-high neon letters on top announce its identity. Inside the ular rotunda, where patrons buy tickets and enter the 13 cinemas he black-box performance space, wall and ceiling surfaces are t by adjustable theater-style fixtures on brackets, intended to give tudio look." Escalators are traced in blue neon, and the dome fea- s a nighttime sky scene made of fiber optic lights mounted in a k blue background. A wedge-shaped section of glazing admits t during the day, but at night, "it's kind of interesting," says ze "because you aren't sure if you're looking at the sky or not. of the theaters has a fiber optic meteor shower," he adds. "It nds kind of corny, but the people love it."

cinemas themselves have large, high seats so each has an unob- cted view. The end-walls of these theaters serve as the screens, to ceiling, wall to wall. "What we thought we would do there for lighting was just use the screen-wall to light the whole place, so floodlit the screen from the floor," says Henze. "When you come in, e are no curtains or anything, you just see this big white, glowing -wall. That gives most of the ambient light." *Charles Linn*



© *Georg Müller photos*



Take its glowing interior surfaces and half-story-high signage, add a canopy dotted with exposed electric lamps, and the entire Cinedom structure (opposite and below) becomes a functional marquee for the Cologne theater complex. Interior surfaces are illuminated by a variety of sources, including indirect fluorescents and bracket-mounted floodlights.


Black Box

the Cinedom, Zeidler Roberts rtnership borrows the propor- nal grandeur of the great vie palaces of old and ssembles it into a high-tech ltiplex environment, a place ere moviegoers can see and be n, becoming stars in their own ht.

iber optic dome (opposite page d right) simulates a starry ht in the rotunda, creating a opy over neon-lit procession- scalators. Walls and ceiling faces are illuminated by snel-style floodlights affixed eiling- and column-mounted ckets (below and below right) nvoke a movie set-like earance.

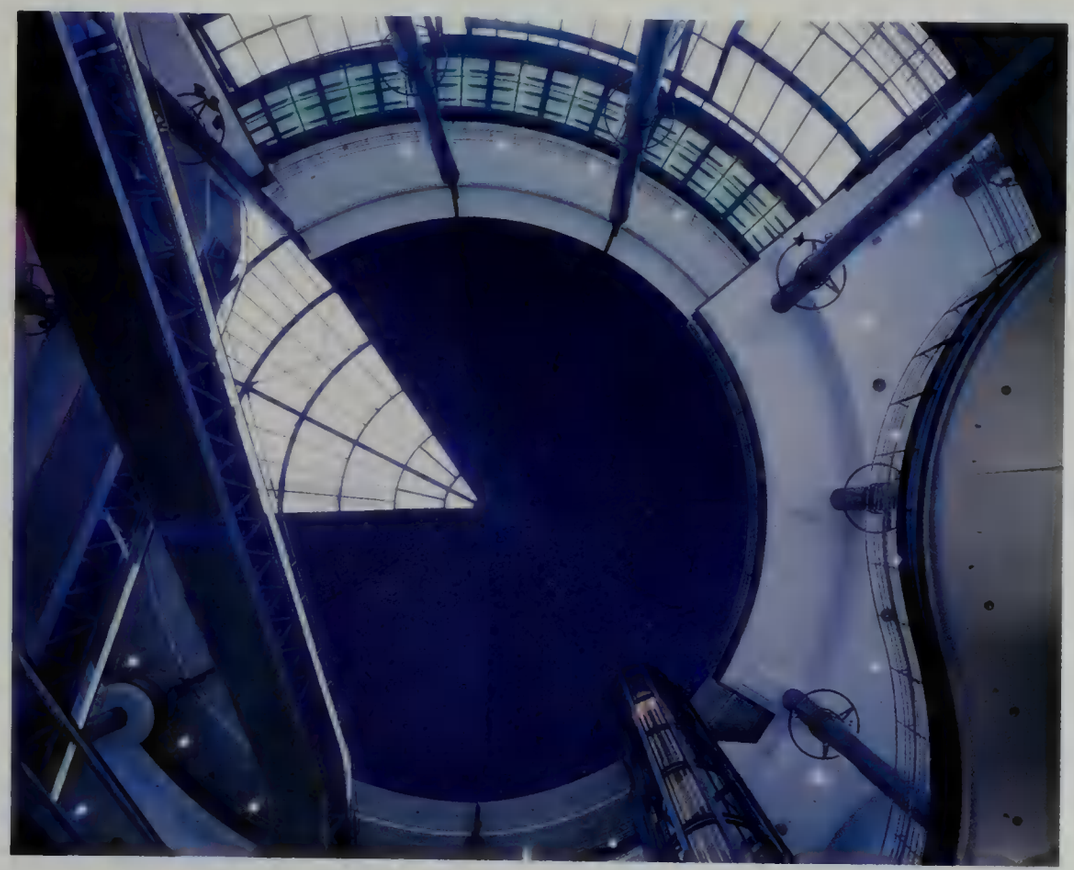
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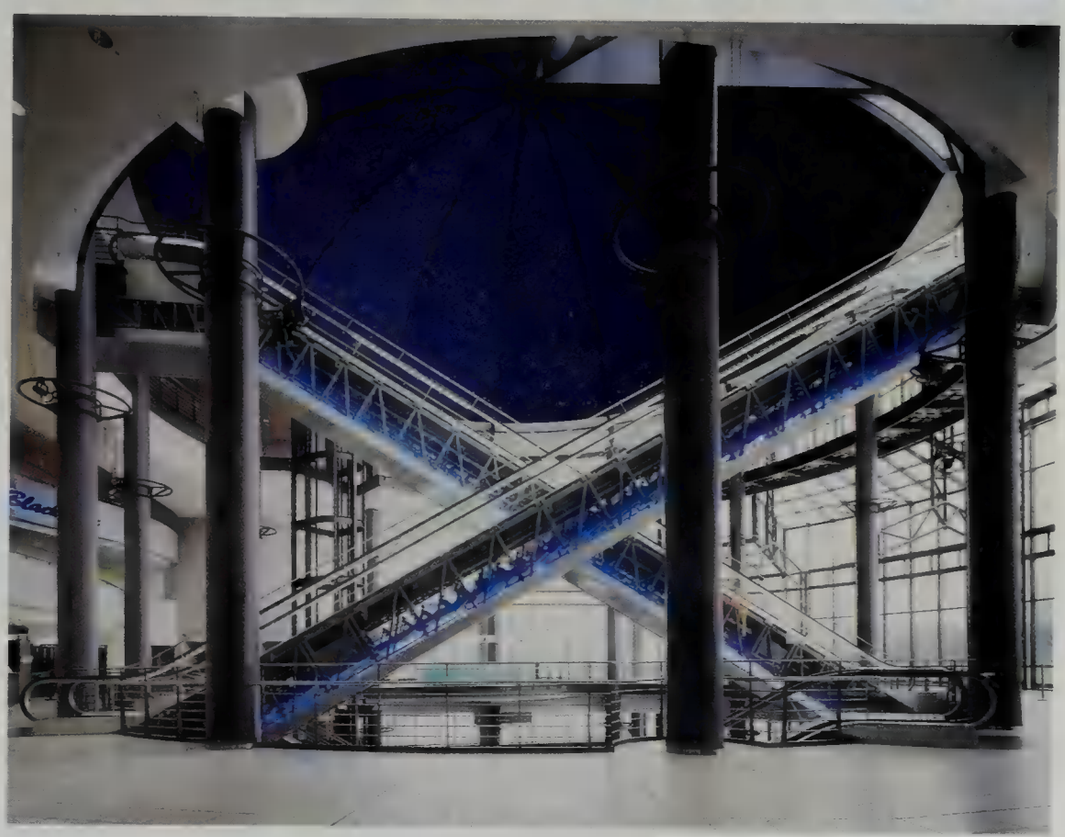
edom at Media Park ogne, Germany

ner: *Constantine Kinohold-*

hitect: *Zeidler Roberts Part- ship*

ctrical Engineer: *Schmidt ter Partner*







Reinventing the Wheel

Lighting designer Stefan Graf's firm, Illuminart, originally became involved with the Chrysler Technology Center as the lighting consultant for the Styling Dome, an interior space that is used to simulate sky light so Chrysler's designers may view prototype automobiles and automobile models. Eventually, the firm's role was expanded to include redesigning plans for lighting the concourses and atria (1a, 2a) that provide circulation and access to the various parts of the Tech Center. The original lighting plan was finished, then gutted during a cost-cutting phase, and now Graf's firm was contracted to weigh restoring some of the lighting that had been cut—in effect, to "re-value engineer" the project.

Typical of Illuminart's work was evaluation of the interior walkway lighting. "The first thing we realized was that there had been some advances in technology since this project had been first designed two years before," says Graf. "The original fixtures were metal halide, but now several manufacturers had come out with a 26-watt, quad-tube fluorescent downlight with a non-iridescent, low-brightness reflector that was more than adequate for the general illumination. That substitution alone cut the cost in half for fixtures on the walkways."

Another, perhaps more significant contribution was a study of the effects of daylight on the public spaces. "We saw all these atria and concourses, and apparently, even though there was an energy management system [EMS] in place, lighting that might have been photocell-activated to run only when needed, was set up to operate full time," continues Graf.

Daylighting specialist Mojitaba Navvab did a mathematical analysis as well as studying scale models (1, 2) in the sky simulator at the University of Michigan to determine whether direct sunlight would enter workspaces. "Moji's role," says Graf, "was to determine how much light would be contributed to circulation and spaces through the glass, to define some of the daylighting concepts and parameters, an develop a control scheme. From his analysis we were able to determine the switching thresholds for the photocells for the two levels o the space. We also discovered from the scale-model sun angle studie that there would be some pretty serious problems with light blastin into offices and onto computer screens on the upper levels. The illun nance ratios were something like 20 to 1! We brought that to their attention, and some shading systems were put in the budget.

"The models are an extremely effective sales tool; not that we were selling anything,but we were trying to convince the client to rebudget money for some things. One can sit and do all the number crunching at a computer, but you'd go cross-eyed looking at all of i and you really have to understand what it is. But with a model, you can can watch the sun rise and set in a few minutes, video tape it, freeze-frame it, and say 'look, here's where the sun hits.' It really gets the point across. And we did manage to get some lighting restored in the budget."

The daylighting studies were also helpful in confirming that the energy management system did need a photocell interface to switch lighting located at the upper level of the concourse under certain co ditions. "We were using 20-degree beam metal halide spots to illuminate some stairs and walkways on the third level down—may 30 or 40 feet down," says Graf. "We certainly didn't want to leave these things on all day. But even though the EMS had an astronom cal time-clock, there are some gloomy days when the lights should on, and the EMS just isn't going to sense that without a photocell.

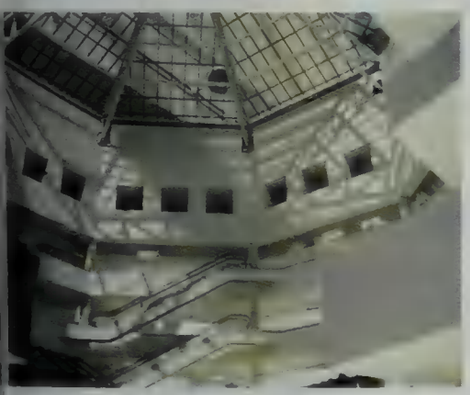
"We estimated conservatively that installing the photocells would wind up saving them about $8000 per year in energy and maintena costs. That would just about pay for the equipment in one year."
Charles D. Linn

sing models, lighting designers udied the lighting in the atria nd concourses at the Chrysler echnology Center. They came up ith an improved lighting plan.





1a





2a

lits
rsler Technology Center
courses and Atria
urn Hills, Michigan
ner: *The Chrysler Corporation*
itect: *CRSS Houston*
ting Designers: *Illuminart—Stefan principal designer; Mojitaba Navvab, ighting designer*
eral Contractor: *Walbridge Aldinger*

While updating a lighting design that had been gutted during a budget-cutting process, Stefan Graf asked daylighting designer Moji Navvab to evaluate the daylighting performance of the concourses and atria at the Chrysler Technology Center. Navvab used scale models (1,2) as well as computer simulations to produce data that helped Graf and other design team members with their decision-making. Among other conclusions they formed, about $8000 per year could be saved by making some lights photocell-activated.

© Balthazar Korab photos 1a, 2a

VISA

Lighting Solutions for Universal Design



CB4062 (DISTRESSED SOLID) BRONZE)



CP2104 (FANTED) ALUMINUM)



OUTDOOR

VISA Lighting

Green Lights

Circle [illegible] on inquiry card

Product Literature/Lighting





418. Euro landscape
A colorful 18-page brochure introduces the Notturno collection of exterior luminaires, designed to bring a theatrical, stage-set ambiance to architectural sites. Line includes wall-wash, path, bollard, and outdoor versions of this maker's projector fixtures. Gives full dimensional, photometric, and lamping data. Reggiani USA, Inc., New York City.

419. Flush poke-through devic
A six-page PTF Application Manua describes the factory-wired, 20 amp duplex receptacle, with a low-profile polycarbonate carpet plate. Include 1/2-in. outlet ports for communicati connections; can be installed in floo slabs from 2 1/2- to 7-in. thick. Dual Lite, Inc., Wiring Products Div., Newtown, Conn.





420. Demanding environment
All facilities have areas that pose difficult lighting problems, from kitchens in schools to chemical storage areas, according to a 28-page guide to special fixtures. Suitable luminaires are shown matched with particular needs: corrosion- or vandal- resistance, contamination control, safety, or cleanliness. Guth Lighting, St. Louis.

421. Cable-suspended haloge
A brochure on the High-Line low-voltage system details how insulat tin-coated copper-stranded cables braced at two points power minim istic fixtures clamped at any point along their length. Also demonstra Via, a track system that accepts th lampheads. Artup Lighting, Santa Ana, Calif.

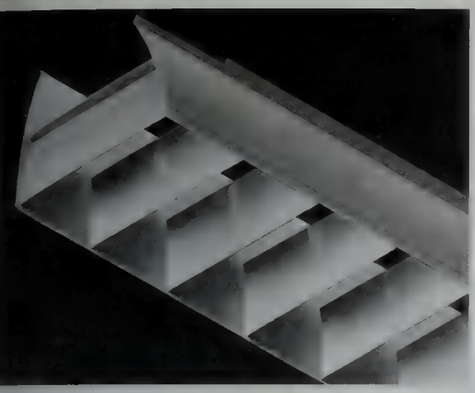




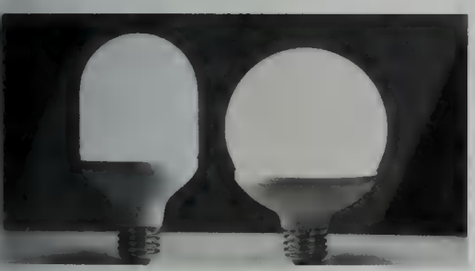
422. Recessed/track lighting
WAC offers a full line of luminaires for retail, office, residential, and hospitality applications. A binder covers each fixture on individual pages, listing complete specifications. Product series includes the Rope Light, tiny bulbs inside colored-vinyl strands furnished in reels of up to 300 feet. WAC Lighting Co., College Point, N.Y.

423. Mini display lighting
The Tiny Tech Track is a miniatur track-lighting system which uses easily bendable track and teeny (about 3-in.) 20W MR-11 adjustab spotlights that can be clamped at spot along the run. Powered by in or remote transformers. Tech Lighting, Inc., Chicago.
Continued on page 47

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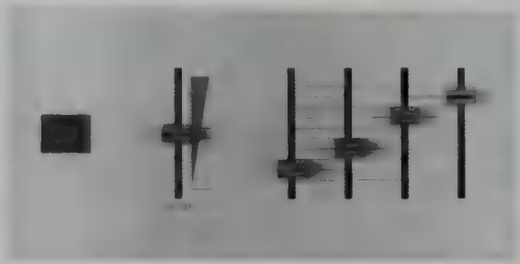
5. Low-glare finish
o-Ray is phasing in Pearlescent, a new
-glare, iridescence-free aluminum surface
t reportedly doesn't reduce efficiency or
tribution, for use in all its semi-specular
lectors and louvers. Available in the 92DIP
l 93DIP Series, it will eventually be used
all products. Neo-Ray Lighting Products,
ooklyn, N.Y.



6. Replacement source
signed as compact alternatives to 60-watt
ndescent bulbs, new Low Profile Elec-
ic Light Capsules come in two
pes—globe and tubular. The 16-watt
G16 and EFT16 bulbs are pocket-sized,
t-weight, and reportedly highly efficient.
y can be used in a wide variety of fixtures
litionally used for 60-watt incandescents.
asonic Lighting, Secaucus, N.J.



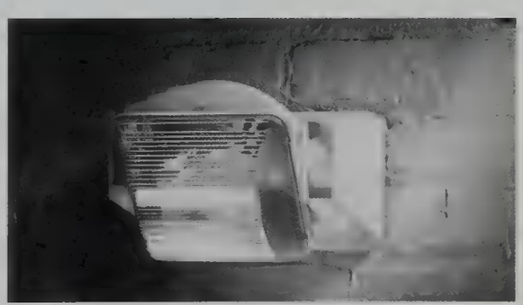
7. Traffic-bearing fixture
BrickLight is a low-voltage architectural
re that can be installed in the ground,
with the surface of driveways, walk-
s, and concrete decks. A Lexan lens
ws cars or even trucks to drive over the
re. Prestige Lighting, San Marcos, Calif.



348. Dimmer control
The DMX Wall Station is a self-contained unit with four independent faders, one master fader, and a take-control/on-off button. It controls one or two dimmers per channel and comes as a wall mount or a portable unit; can be run alone or in series. Colortran, Inc., Burbank, Calif.



349. Ultra-thin exit
At just 3/4-in. thick, the TPX (thin-profile exit) sign minimizes off-wall protrusion. Available self-powered, remote-powered, or AC-only, units have LED lamps that last for over 200,000 hours. The sign's die-cast aluminum construction features four face-plate finishes and either red or green letters. Cooper Lighting, Elk Grove Village, Ill.



350. Outdoor security
The Lumark Caretaker is a low-voltage HID outdoor security lighting fixture for use in commercial or residential projects. Designed for both ceiling and wall-mount applications, the fixture is available in white or architectural bronze. Equipped with either 35-watt HPS or 50-watt HPS lamps, it provides excellent energy efficiency and light distribution, says the company. Cooper Lighting, Elk Grove Village, Ill.
Continued on page 49

In 1983, We Introduced The First Compact Fluorescent Downlight

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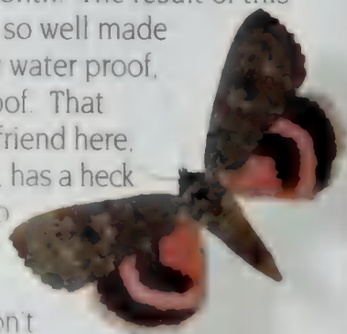
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Maybe it's because we're located in the land of 10,000 lakes. Or maybe it's the extra-curricular design meetings at the Blue Note. Whatever the reason, we make lighting fixtures that float. Like our new Softform fixture, the Sedona, shown just below the Sierra. To build it, we combined a die-formed aluminum extrusion with a one-piece canopy, mechanically crimping them together for a water-tight seal. And we know it's water tight, because we filled it with rocks and floated it out on Lake Winsted for a month. The result of this effort is lighting so well made that it's not only water proof, it's even bug proof. That means that our friend here, *Cicindela ebocata*, has a heck of a time trying to get in one of our luminaires. You however, won't. That's because they're designed with hinged doors for easy maintenance.





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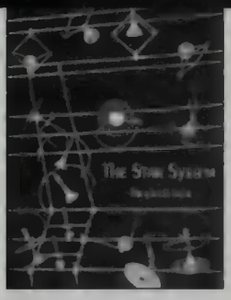
4. Low-voltage accents
2-volt system, the Ambiance linear
gn has a low profile (only 3/4-in.-
n). Track carries miniature
able spotlights. Components may
ut to exact field dimensions, and
ted to blend with any decor. UL
d. Sea Gull Lighting,
erside, N.J.



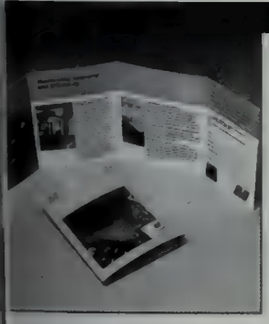
425. Electrical products
Appleton's newest Master Catalog contains over 15,000 electrical products on over 900 pages. Ordering, specification, and general-use information is said to be well organized and easily accessible. New products include Contender control stations, Mercmaster low-profile luminaires, and Interchanger plugs. Appleton Electric Co., Chicago.



5. Lamp sourcebook
tten for the design engineer,
alog 166 has 65 pages of specs on
gen lamps, visible LEDs, minia-
lamps, neon lamps, and infrared
Ds, as well as accessory sockets
holders. Graphs display spectral
ation. New lamps include halogen
ctors, 120-volt halogens, and
bright LEDs. Gilway Technical
p, Woburn, Mass.



427. Expressive cable system
The Star System includes over 60 components, from wire cables to colorful connectors, glass shades, and aiming handles. A complete, 20-page catalog describes it as a true three-dimensional installation with several unique safety features, such as bolts connecting halogen spots to either insulated or bare cable. Thunder & Light, New York City.

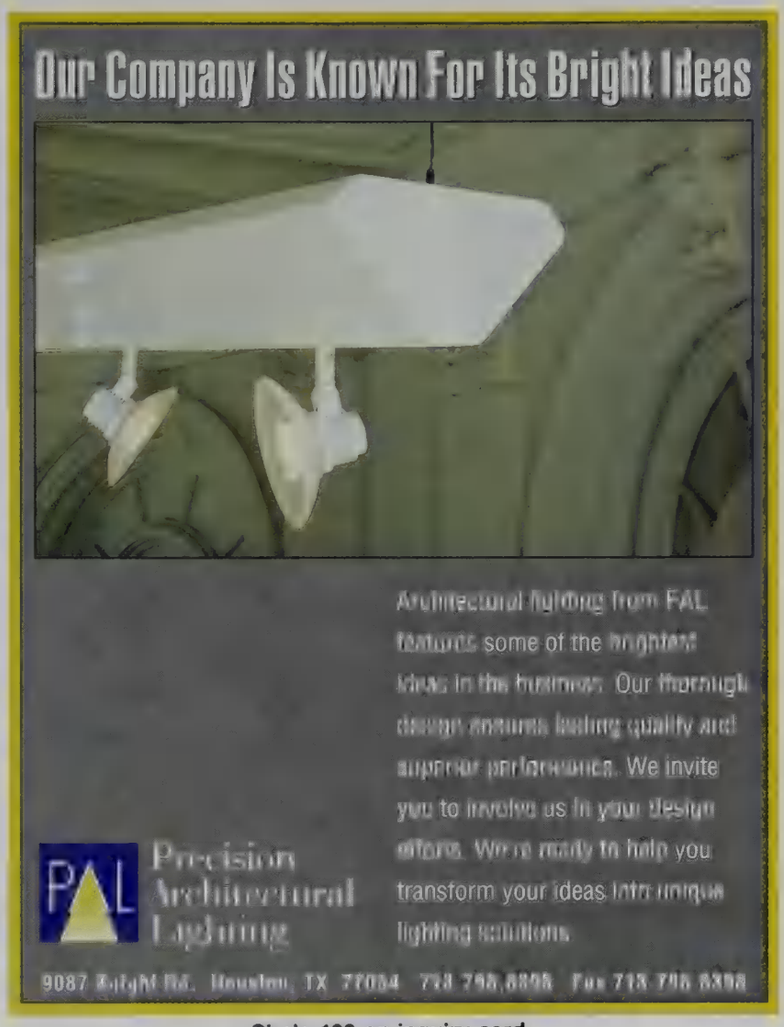


. Hybrid ballast equipment
er explains key features and
gy-saving benefits of the full
st line, including the Universal
full-light-output hybrid and
Plus devices for T8 lamps.
ids are said to provide savings of
35 percent over standard mag-
ballasts. MagneTek, Inc.,
mus, N.J.



429. Electric control
The LiteTouch 2000 not only dims and operates incandescent, fluorescent, neon, cold-cathode, and low-voltage lighting in any sequence, but can also control any electrical device, from sprinklers and hot tubs to hvac. Offered in a one-room package, the Scenario, and full-house systems. LiteTouch, Inc., Salt Lake City.
Continued on page 48

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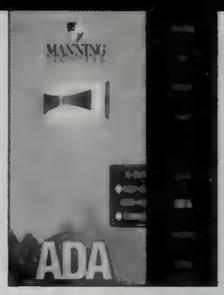


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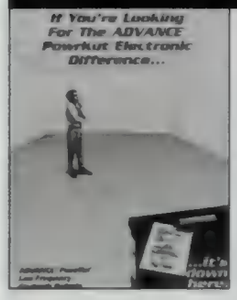
Product Literature/Lighting





430. Uniform outdoor lighting
An updated four-page brochure highlights a line of compact, high-efficiency luminaires said to achieve even illumination without hotspots, scallops, or striations. Shows the weatherproof fixtures available, and outlines their flexibility in placement; lists light-source capabilities. Elliptipar, Inc., West Haven, Conn.

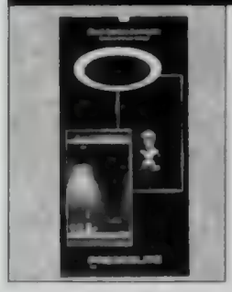
431. ADA-compliant fixtures
Colorful catalog describes fixtures that meet ADA provisions and provide an attractive ambience for the spaces in question. All sconces are shown illuminated, with sectio and plan views giving dimensional information. All finish and lamping options listed. R. A. Manning Co., Sheboygan, Wis.





432. Low-frequency ballasts
An eight-page brochure describes PowrKut energy-saving low-frequency electronic ballasts for 4-ft T8, T10, and T12 fluorescents. Ballasts offer a high power factor and are sound-rated A. Chart gives light-output data for all PowrKut ballasts, comparing them with high-frequency units in identical systems. Advance Transformer Co., Rosemont, Ill.

433. Laminated-wood stand
Light poles made of southern yell pine, Alaskan yellow cedar, red ce redwood, and Douglas fir are pre-engineered for safety and performance. Catalog describes h a kiln-dried laminating process increases the strength and durab of the standards, giving them a lif expectancy of 40-50 years. Wood Technologies, Emmaus, Pa.





434. Small-scale recessed
New catalog covers all of this makers small-aperture recessed fixtures, such as 4-in. downlights, housings for MR-16 sources, and the H4 line-voltage series which includes type I.C. housings and remodel housings. Standard features: diecast trims and baffles, Alzak reflectors, and aiming locks. Shows accessories. USI Prescolite, San Leandro, Calif.

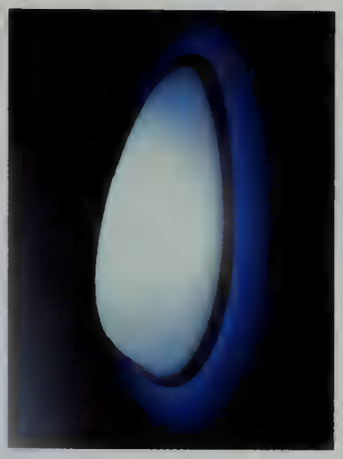
435. Sports floodlight
A 12-page catalog details the Ult Sport metal-halide floodlight, an IESNA Class III luminaire said combine high light output with e lent visibility and color renderin players, spectators, and TV. Opti include instant hot restart and b level controls. GE Lighting Syst Hendersonville, N.C. ■

For more information, circle item numbers on Reader Service Card.

1. High-style compliance

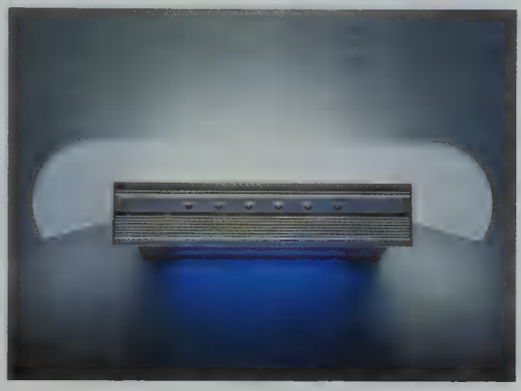
s International will introduce six different igns at Lightfair, in 18 UL-listed models a range of colors, all of which meet ADA uirements for public-access spaces. For n incandescent and fluorescent sources, st fixtures can be used outdoors as well as oors. Shown right, across the top, are ee views of the Drop sconce, designed by rc Sadler for Arteluce. A molded-silicone user fits like a resilient slipcover over a ycarbonate backplate. Light from behind backplate hits the edges of the colored stic, giving an outlining glow. Drop/1 has a gle 9W CFL lamp; the slightly larger op/2 (10-in. high) has two. Damp-location eling makes Drop suitable for kitchen and n use. Horizon, lower left, uses two PL-13 L lamps; 24-in. wide by 4 1/2-in. high. igned by Perry King and Santiago anda. For wall or ceiling, the Geco fixture ttom right) has an etched-glass diffuser in a cast-metal ring, for a total depth of er 4 in. The version shown takes either 25W candelabra lamps or one PL-13 L. Flos, Inc., Huntington Station, N.Y.

tinued on page 51





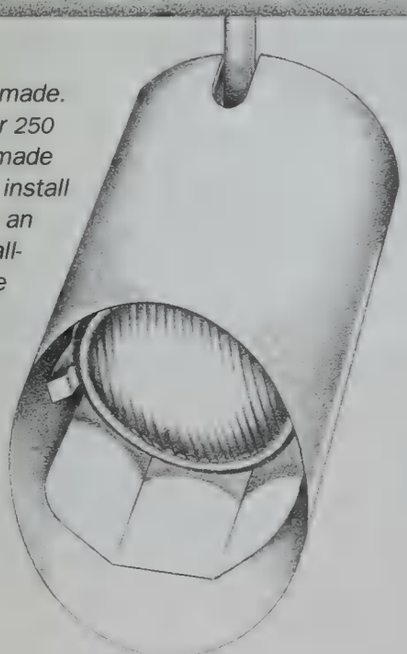






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MAXIMA 30 W MAXIMA 30 O

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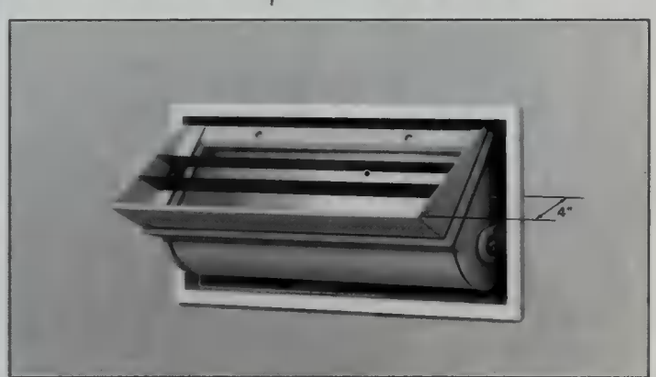
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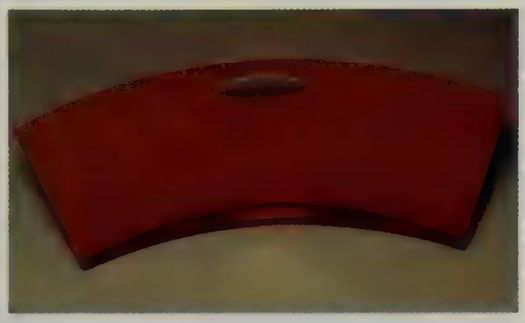
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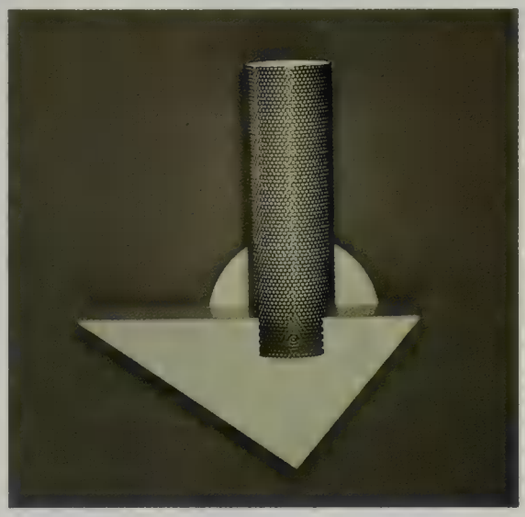
Circle 113 on inquiry card

2. Material differences
ghting products from the three Baldinger isions—Louis Baldinger & Sons, ldinger Architectural Lighting, and ldinger/Lowy Partnership for Design—are oduced using a wide range of decorative-terials. The rather sumptuous Greek Key ndelier, near right, offers a choice of sted-glass or alabaster diffuser, with gold-ted brass trim. Designed by Robert A. M. rn, it is available as a sconce as well; for ndard incandescent or CFL lamping.
om a 16-piece collection of ADA-compliant nces (described as "well priced") Twingo p right) is made of matte-finish ceramic in one or terra-cotta color. Light from a gle PL-13 washes upward from the curved . Designed by Piotr Sierakowski.

so from the ADA collection, Julian Weiss's epri uses perforated and solid stainless el in a very geometric assembly that can mounted in any direction. Though some-at solid appearing, it's only 2 3/4-in. deep. mping: one PL-13. Baldinger Architectural ghting, Inc., Astoria, N.Y.
ntinued on page 52







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Manufacturing Sources

For your convenience in locating fixtures and other products shown in feature articles, RECORD has asked the architects and lighting designers to identify their sources.

Pages 30-35
LeBonheur Children's Medical Center
Craig A. Roeder Associates, Inc., Lighting Designer
J. Wise Smith Associates, Inc., Architect
Edison Price Lighting, ; Neotec; Lite Lab; Hydrel. Exterior lighting: Edison Price Lighting; Neotec (neon).

Pages 40-41
Chrysler Corporation, Corporate Design Center Atrium
Illuminart, Lighting Designer
Lobby recessed CFL downlights: Mirro-flector. Adjustable recessed metal-halide fixtures: Kurt Versen, Inc., Metal-halide accent lighting (concourse): Sylvania. Uplighting (concourse/atrium) : Elliptipar, Inc. Recessed metal-halide downlights (concourse/atrium): Kirlin. Recessed two-circuit track lighting (throughout): LSI/Lighting Services, Inc. Controls systems: Multipoint (Mark III). Sources: General Electric Lighting; Osram/Sylvania.

New Products



353. Metal-halide luminaire
A new perimeter safety and security fixture, the NRG-305 puts out 4000 lumens, like a 50-watt HPS fixture, but provides a better quality, true-color white light, and has a 15,000-hr rated life. The refractor is made of an extra-strong acrylic said to be non-yellowing; the low-loss ballast provided uses only 58 input watts. Hubbell Lighting, Inc., Christiansburg, Va.



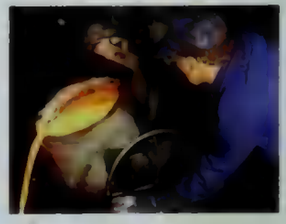
354. Combo control
A new device, the Carlon FLC300 is a du slide control that operates both light and for ceiling-fan units with lights. It lets th lights burn at full brightness even while fan is at full speed, and can fine-tune fan speed within its three pull-chain ranges. Lamson & Sessions, Cleveland.

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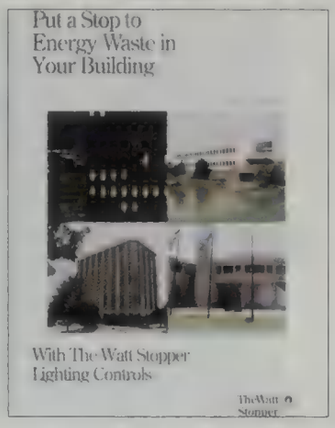


The new WoodForm collection of California redwood outdoor lighting features wall sconces, post, bollard, and garden fixtures in incandescent, fluorescent, high intensity discharge, and low-voltage modes. Each design utilizes hand-joinery and advanced lamination techniques to create unique, sculptural light forms of solid wood. Are all U.L. approved for wet locations. 1-800/624-5091

WoodForm, Inc.

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Automatic Lighting Control



Complete line of occupancy and daylight sensors which turn lights on and off automatically anywhere in your building and provide energy savings up to 60%. Includes bi-level automatic wall switches, Ultrasonic, PIR and Dual Technology ceiling mount occupancy sensors, and light level controls. Watt Stopper sensors are compatible with electronic ballasts and with almost every lighting system. 2800 De La Cruz Blvd., Santa Clara, CA 95050 **1-800 879-8585.**

The Watt Stopper

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Hanover Lantern Commercial Lighting



Hanover Lantern designs & manufactures high quality heavy duty cast titanium/aluminum commercial grade decorative lighting fixtures, poles & accessories. A selection of design styles, light source options, light distribution systems, mounting options, computer generated photometric data plus a custom design service are available to the architect or engineer. 470 High St., Hanover PA 17331. Phone (717) 632-6464, fax (717) 632-5039

Hanover Lantern

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LED Edge-Glo Exits Guaranteed Forever



Alkco has taken LED technology to the edge. Ingenious light distribution system (patent pending) illuminates LED Edge-Glo exits brightly and without striations -- but uses half the energy, a miniscule .9W per panel. The only components Alkco doesn't guarantee forever are the optional, back-up batteries. For details, call Alkco, 708-451-0700.

Alkco

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Draws Half the Energy Used by Other LED's



A single LED Edge-Glo panel, running non-stop 366 days a year, will use all of 59¢ worth of energy. That's at 7 1/2¢ per KWH, about the national median. The secret to halving energy use is Alkco's patent-pending light "fanning" design that optimizes output from fewer diodes, illuminating without striation.For details, call Alkco, 708-451-0700.

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Newest Thermostat Models



More than just a heater - it's an investment in comfort that pays dividends in $$$'s! 99.9% efficient, fully automatic thermostat, easy to use automatic pushbutton ignition. Vent-free, patented ceramic burner plate technology delivers radiant and convection heat simultaneously. Get more than you bargained for $ for $ you can't beat a Rinnai. For information telephone: 1/800/621-9419.

Rinnai America Corp.

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Product Literature Spotlight

LCPOF & Illuminators



LUMENYTE INTERNATIONAL CORP. (LIC) is the worldwide leader in the manufacture and sale of large diameter plastic optical fiber (LCPOF) and illuminators. Using a proprietary, patented manufacturing technique LIC produces LUMENYTE® LCPOF for a variety of lighting applications including pool and spa, specifier, entertainment, health care, signage, transportation and others. The fibers are from 3mm to 19mm and are used as either point lighting or side lighting similar to "neon". For more information call LUMENYTE customer service at 714 556-6655.

LUMENYTE International Corp.

Circle 124 on Inquiry card

Kable Lite

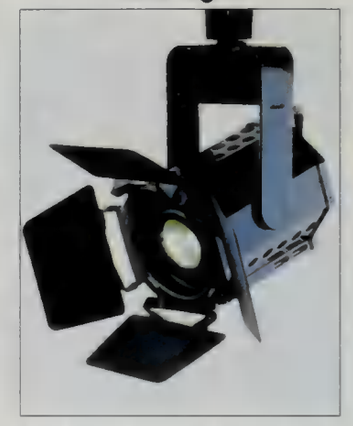


Featuring Kable Lite, the UL listed low voltage cable system with a wide array of fixtures. New products include picture lights and decorative ceiling fixtures while the telescoping arms of the Tellie track fixture revolutionize track lighting.
Tech Lighting, Inc.,
2542 N. Elston Ave.,
Chicago, IL 60647.
(312) 252-0008,
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Tech Lighting, Inc.

Circle 125 on Inquiry card

Theatrical Track Lights



CON-TECH introduces track fixtures styled like miniature stage lights for dramatic commercial or retail accent lighting. For use with low voltage MR16 halogen lamps for accurate color rendering and energy efficiency. Integral yoke-mounted solid-state transformer. Adjustable barn doors. "Sure-set" yoke design. No-tools lamp access. Convenient ON/OFF switch. LIGHTFAIR Booth 330.

CON-TECH Lighting

Circle 126 on Inquiry card

Control Station Brochure

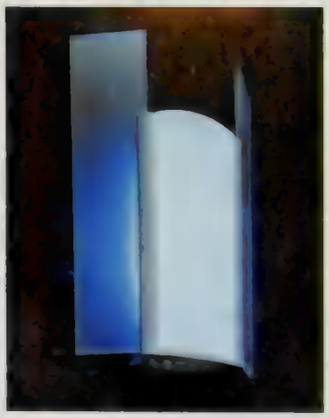


Say goodbye to unsigh banks of toggle switch and wall box dimme Up to eight switches dimming and pres scene control can housed in a single ga space. Vantage stati are fully programma and available in variety of colors a finishes to complem any decor.

Vantage Controls, Inc

Circle 127 on Inquiry card

New ADA Compliant Lighting Collection



The Aries/1 wall sconce is one of several newly introduced low-profile and energy-efficient wall sconces. Two 13-watt PL fluorescent lamps are utilized with 27- or 39-watt Biaxial lamping and horizontal configurations optional. Specification sheets on [illegible] U.L. listed, ADA-compliant wall sconces in [illegible] lamping [illegible] currently available [illegible] information call [illegible]

[illegible] Inc.

[illegible] Circle [illegible] on Inquiry card

GM-6000 Series In-Ground Landscape Lighting



Bronzelite introduces the newest generation of performance landscape luminaires with the GM-6000 family of fixtures. The GM-6000 offers a choice of four different housing arrangements with optics ranging from compact fluorescent to 250 watt HID. The GM-6000 also features composite housings sealed optics, cast-in-place silicone gaskets, Touch-Aim™ optics, encapsulated ballast, die-cast construction & a safety on/off switch. The GM-6000 is designed for specifier & contractor compatibility & engineered for accurate installation, operation & maintenance. With over [illegible] different optical arrangements to choose from, the GM-6000 offers product flexibility for a wide variety of landscape & commercial lighting applications. Never before has such versatility been available in one luminaire. Three year warranty.

Bronzelite

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The Nevada New From Sternberg



Authentic western "gaslight" styling emulates historic originals. Gloss white underside of the roof reflects light downward where its needed, not up towards the sky. Vandal resistant "glass" (polycarbonate), durable cast aluminum body and energy efficient HID lamping combine in a fixture that will give years of service wherever it's used. Scales 21" x x 29" h.

Sternberg Vintage Lighting

Circle 130 on Inquiry card

Workstation Task Lighting



Dazor's new Hang [illegible] Mounting Systems fre valuable desktop sp Easy to install brackets sli partition slotted channe adjust to various depths. Mount version spans the of a wall panel & mou the slotted channels on sides. Single Mount ver a stationary pivot holde mounts directly in one cal slotted channel. Lo us in SWEET'S Light Sourc see us at **Lightfair booth #**

Dazor Manufacturing

Circle 131 on Inquiry card

In Grade Up Lights



This 36 page catalog covers the new, innovative 9000 Series Ingrade Lighting fixtures. See how modular design makes a difference in performance, installation, maintenance, and durability. Available in a variety of configurations, this series accepts lamps to 175W HID, 250W incandescent. Architectural and landscape illustrations include recommendations for the most common applications. Hydrel, Sylmar, California.

Hydrel

Circle 132 on Inquiry card

MARINER III Series

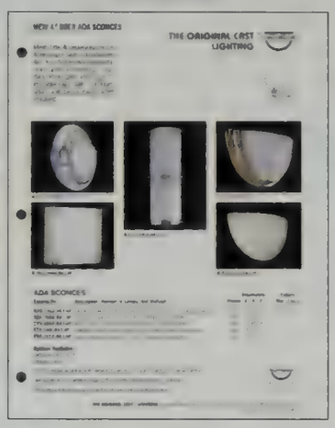


Eclipse Lighting, Inc. introduces the MARINER III Series. A decorative, durable and energy efficient solution for compliance with the new ADA standards. Featuring three attractive sizes for indoor or outdoor use. Lamp sources include Incandescent, PL and HID. Also available in tamper-resistant models. Custom inquiries welcome. For complete information: Eclipse Lighting, 12359 Wood St., Chicago, IL 60622. Tel: 312/862-0802; Fax: 312/862-1138.

Eclipse Lighting

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Wall Sconces



The Original Cast Lighting proudly presents our line of ADA compliant wall sconces. In addition to fixtures to complement the existing line, we have added several new designs. All accommodate energy-efficient compact fluorescent lamps and are available in a variety of finishes and diffusers. The Original Cast Lighting, 6120 Delmar Blvd., St. Louis, MO 63112-1204 * 314-863-1895, Fax: 314-863-3278.

The Original Cast Lighting

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Wildfire's 400 & 250 watt series of "Long-Throw" (up to 100') Blacklight (UV) fixtures define the 'state of the art" in UV effects lighting for architecture and entertainment worldwide. The Wildfire unit produces the Blacklight effect with many times the brightness, intensity and coverage of previously available technology. Fluorescent paints, specialty coatings and materials also available. UL Listed. Call: 310-398-3831.

Wildfire, Inc.

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Add to your files by ordering back issues of RECORD LIGHTING, the exciting color supplement to Architectural Record. The price per issue is only $3.50 each (includes postage and handling). Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

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Sun Valley Lighting

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New Products All New Catalog



Architectural Area Lighting introduces several new fixtures in an all new catalog. The fixture shown, the new Vandal Guard™ features a segmented reflector and vertical lamp for superior optical performance, all contained in a rugged cast aluminum housing. Photometric information is available for all AAL products on IES formatted disks. Call or write us for your copy of the new catalog. Call 714 994-2700 or fax 714 994-0522.

Architectural Area Lighting

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Justice Design Group, Inc.

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(E) Engineering & Retrofit
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Italics - Reader Service number

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Boyd Lighting Co., **25** ; *101*
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C
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D
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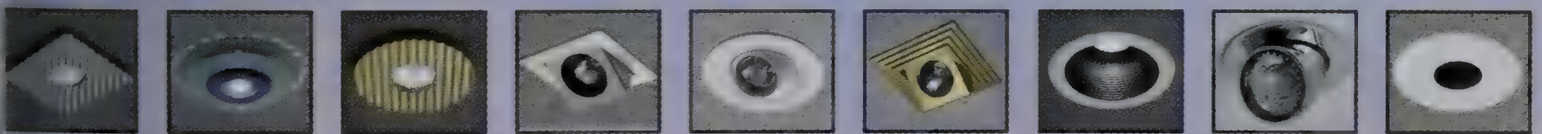
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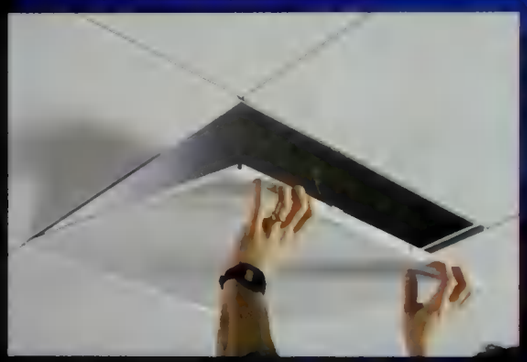
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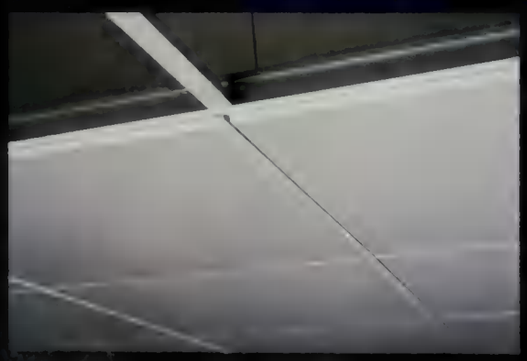
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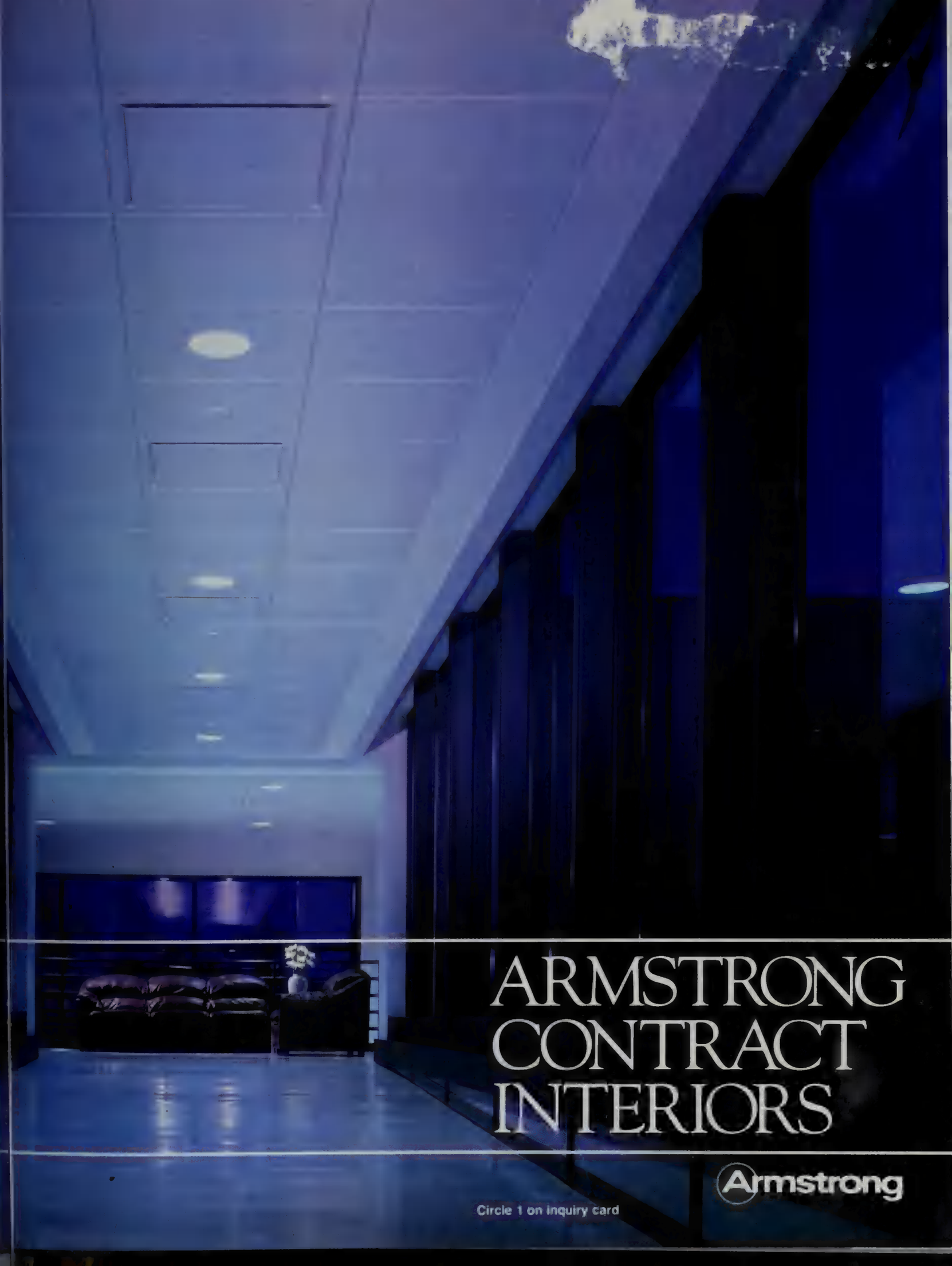
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Record Houses

I am concerned about the cover of the "1994 Record Houses" issue [RECORD, April 1994] of your magazine. The photo appears to glorify the devastation of the land by the architecture. I understand that the land was previously a "sand mine," but the foreground vegetation appears to have been cut and bulldozed as part of the construction process. The image this conveys is one of the "tough" architecture brutalizing the landscape. Given our profession's pretensions to environmental sensitivity, this image seems wholly inconsistent. What you publish influences our whole profession; particularly the students and interns. In an age when we are finally awakening to both our power to destroy and our responsibility to protect the planet it seems incumbent upon all of us to think about how we influence the culture. The imagery in your cover certainly does not recognize that awareness. This is not a matter of style or political correctness; it is simply a matter of survival.

James Cutler
Architect
Bainbridge Island, Wash.

Frank Lloyd Wright said that no architecture is possible without a good client. Yet in leafing through RECORD HOUSES, I was struck by how all the architects had chosen to photograph the houses before their clients moved in. Only a token chair or two inhabited each room to give it scale. Even the library had no books on its shelves. Clients–complex, fascinating, infuriating clients–were completely invisible.

I assume this was no accident: [illegible] their pro- [illegible] them to [illegible]. What [illegible] send the public? What does it tell potential clients? Clearly, that architects imagine clients will only ruin the perfection of their design with their comfortable reading chairs, books, newspapers, coffee mugs, family heirloom furniture, and God forbid, televisions.

How sad that architects imagine their creations as ideal only in their empty state. How sad that architects can't expand their artistic conceptions to include the laughter, warmth and the clutter of human presence that makes a house a home. What sort of bizarre world are we trying to create?

Robert Gerloff
Mulfinger, Susanka & Mahady Architects, Inc.
Minneapolis, Minn.

Each year the art, architecture, and design students eagerly await the arrival of RECORD HOUSES. Last week our 1994 issue arrived and the creativity and esthetics are incomparable. Bravo! However, we would like to see more. So teach us more and provoke us less.

Jim Sondgeroth
Instructor
Kokomo High School
Kokomo, Ind.

AIDS In the Workplace

I read with interest your excellent piece "When AIDS Comes to the Office" [RECORD, March 1994]. I'd like to add some additional issues to be faced from my own experience.

As I was caring for my lover, who died at the end of last year, my time at the office contracted from 8, to 6, and then 3 hours a day. Fortunately, my business partners found a way to fill the gaps, but my interests were elsewhere and the practice suffered.

Continued on page 29

Through June
Harvard University Graduate School of Design presents courses in the field of architecture. For a catalog, contact the Office of Development and External Relations, GSD, Harvard University, 48 Quincy Street, Cambridge, Mass. 02138. Call 617/495-1680 or fax 617/495-5967.

Through July 5
The Museum of Modern Art in New York City presents an exhibition of the work of architect Bernard Tschumi, part of its "Thresholds" series.

Through August 7
"Cast Iron from Central Europe: 1800-1850, an exhibition organized by the Bard Graduate Center for Studies in the Decorative Arts, 18 West 86th Street, New York, N. Y. 10024 or call: 212/721-4245.

Through August 18
"Hamburg: The Hamburg Architectural Summer 1994. The city will present exhibitions, symposiums, and discussions, on the architecture of Hamburg. Write Inge Maisch, Heimhuder Strasse 66, 20148 Hamburg, Germany.

Through October
Canadian Centre for Architecture presents an exhibition, "Learning Architecture," developed by students of architecture at the University of Montreal. Call Brigitte St-Laurent Taddeo, 514/939-7000.

June 12-17
"Design and Human Bodies" is the theme of the 44th International Design Conference in Aspen. For registration contact IDCA, PO Box 664, Aspen, Colo. 81612, or call 303/925-2257, fax 303/925-8495.

June 13-15
NeoCon '94, The Buildings Show, the World's Fair for Facilities Planning, Design and Management, will be held at The Merchandise Mart, Chicago. Call 800/680-4636, ext. 300.

Continued on page 28

ARCHITECTURAL RECORD

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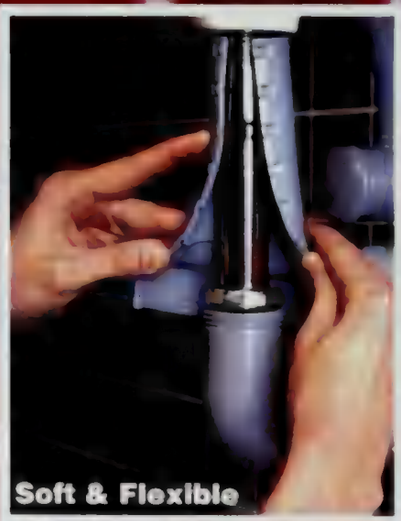
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Architect Bashing: Enough Already!

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TED IN U.S.A.

Bashing architects has become a national pastime. Attend any construction-industry forum where two or three engineers, building-product managers, owners, or contractors are gathered together and you'll confront this litany of charges:

Architects are elitist. Architects are unable to "hold" a specification. Architects won't come up with an accurate project cost estimate. Product sales reps can't get to see the architect. Architects are afraid to take on risk. Architects refuse to tackle construction-contract administration. Architects can't keep a project on schedule.

Among the worst critics are architects themselves. They complain their authority is being whittled away by an array of consultants (including a new kid on the block known as the program manager, retained to manage an owner's construction programs). They wail over a litigious culture that forces them to eschew some traditional services. They lambast the marketing practices of their peers. They attack the schools of architecture for not providing an employable workforce. And they often criticize each other in public.

The media, knowing that bashing sells more papers than praise, pick up on these assaults and help perpetuate what is first and foremost a myth: because what is under attack is an architectural stereotype that is on its way to extinction. The media in fact does much better in defining the architect's role when it refers to a statesman as "an architect of detente;" to a corporate reformer as "architect of the new YZ Corporation;" or, in a recent *New York Times* obituary, to W. Graham Clayton as "architect of Amtrak growth." For a new stereotype is emerging, one no longer confined to designing buildings via private practice. This new architect is already providing the very services the critics fail to recognize—entrepreneurial positions in real-estate development; computer-software development; retainer agreements with clients in matters ranging from code, zoning, and ADA compliance to facilities management to fine-art selection; as managers of huge, tightly budgeted and scheduled construction programs such as prisons; in staff roles with corporations and public agencies; and through growing impact in consulting on infrastructure and other engineering-focused projects. As Phoenix architect Neal Jones told me not long ago: "My job is to see the big picture. It's to point out the pros and cons of materials, even if they cost less; to point out the environmental issues. My job isn't to take the dollars and run."

A business upturn will end the bashing, many claim. I don't believe this. The pattern won't go away until a new stereotype of architect is recognized, one not conceived narrowly as designer of buildings (although this will always be a core service), but one who serves across a far wider range in the building marketplace. The construction managers who encroach on the turf of the old stereotype must come to be seen as architects under this broader definition. So must the facilities managers, urban designers, and product developers. All who operate under the umbrella of building design are essentially performing functions of this broader-based architect. Perhaps the title itself must be changed, so that pride doesn't get in the way of reality.

Building an educational system and a professional association to accommodate this new, broader stereotype is a mammoth task, which many bright minds are already exploring. Meanwhile, the design and construction community should stop hunting for scapegoats and look instead on the rich opportunities, domestic and global, for those with vision, drive, and a cheerful outlook. *Stephen A. Kliment*

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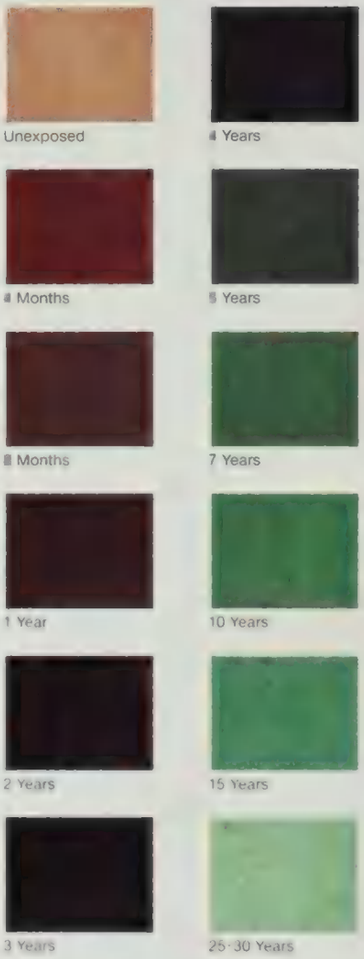
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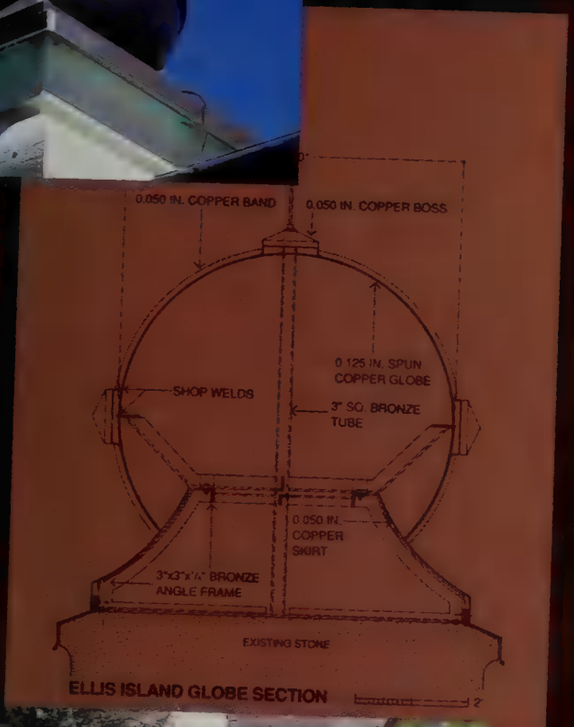
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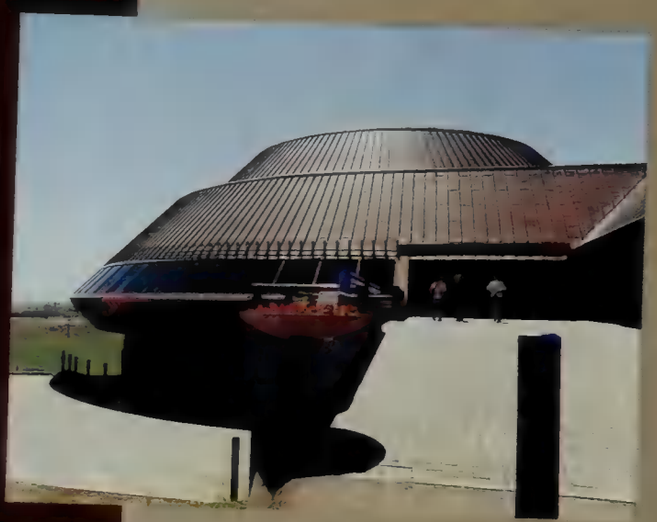


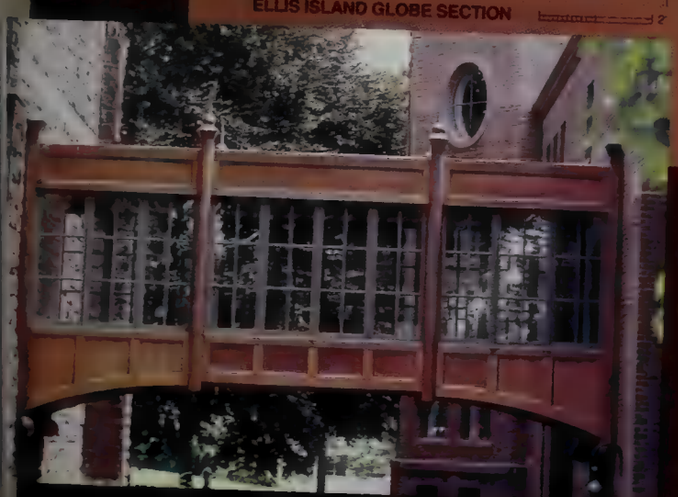
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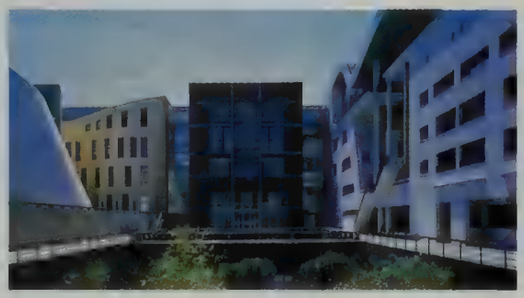
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Awards

Christian de Portzamparc Wins 1994 Pritzker Architecture Prize



he 1994 Pritzker Prize goes to Christian de ortzamparc, the first French architect to in the award. "I am happy and proud to be onored by such a prize; it is a great encour-gement in my work," said the 50-year-old ortzamparc from his Paris studio. He also oted his country's patronage of young archi-ects as critical to his success at a relatively oung age. The formal citation of the jury—hich this year included Giovanni Agnelli, Carter Brown, Charles Correa, Frank ehry, Ada Louise Huxtable, Toshio Naka-ura, and Lord Rothschild—says in part: Every architect who aspires to greatness ust in some sense reinvent architecture; onceive new solutions; develop a special esign character; find a new esthetic vocabu-ry. Portzamparc's work exhibits all these haracteristics. He has an unusually clear nd consistent vision, devising highly original spaces that serve a variety of functions." The award, which includes a $100,000 grant and a bronze medallion, will be presented by Jay A. Pritzker, president of The Hyatt Foundation, at a June 14 ceremony in Columbus, Indiana. *K.D.S.*





Portzamparc's Cité de la Musique, Parc de la Villette, Paris, France (above); Apartment Building, Fukuoka, Japan (right).

England

It's 20 Feet Underground, But You Can't Miss It

Andrew Putler

roughton McAslan uses transparency to tegrate a planned underground rail station central London with both the street and e office building that will rise above it. unging 20 feet below grade in order to ave street frontages free for retail and fice uses, the Dean Street station will netheless be fully visible under a curved recast concrete canopy that runs the full ngth of the building just beneath the third or, creating a ticket-hall volume 50-ft high. azed walls along the length of the building recourt will provide a second up-down con-ctor and, along with glazed pavement hts, added daylight. Roof-level mechanical eas hidden behind glazed panels will top e heavily glazed office building. The archi-t-led civic project calls for honey-colored nestone cladding both above and below ound.■



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1927
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aly

Milan Appeals to Suffering Market with Cost-Consciousness and Production Strengths

lan's International Furniture Fair opened a suffering market with calm optimism, phasizing friendly, simple Modern aimed owering prices and spotlighting Italian oduction strength. Plastics, like Antonio terio's transparent or opaque storage tem for Kartell (4), were everywhere for a v flexibility of form, range of color, and rdability. Gone was the emphasis on fur- ure as art and designer names. A kcase/desk combination (3) Combination, William Sawaya for Sawaya & Moroni, ressed in an amusing way the downsized ce. B&B Italia updated Gaetano Pesce's 9 UP chair and ottoman, while Flos wed a 1954 A.& P.G. Castiglioni light. h a near-boycott by the Spanish, non-Ital- s made a light showing, preferring the less ionalistic Cologne fair, where they're not egated to back-lot buildings. It was in an's off-fair gallery shows that young erimental designers were found, like gland-based Ron Arad (2) and Holland's oog Design. Droog, with Tejo Remy's rag ir (1) showed the social concern once ical of contemporary Italian design.
ire Downey



© Hans van der Mars

1



2



3



4

wards

ld Faithful Inn, Blue Heron Coal Mining Camp re Among Winners of Presidential Design Awards

nabilitation of Yellowstone National Park's l Faithful Inn (1), the nation's grandest log ucture, dating to 1903; a series of struc- es marking the old Blue Heron Coal ning Camp in Kentucky (2); and Mer ge Villas in Mer Rouge, Louisiana, gov- ment-subsidized, low-income housing that t $36,000 per unit, with Wenzel & Associ- s, architects (3), were architectural ners–in a group of eight projects cited s spring by President Clinton–of the 1992 sidential Awards for Design Excellence e winners were selected in 1992 but not viously announced due to the then contro- sy over leadership of the National lowment for the Arts). Agencies for the ee winners are, respectively, the National k Service, the Army Corps of Engineers, the Farmers Home Administration. Next rds will be given in fall 1995. *S.A.K.*



1



2



3

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esign

riefs

inners

he 1994 American Academy in Rome zes winners include Garret Finney for hitecture, Leslie A. Ryan for landscape hitecture, Karen Bausman for design arts, Thomas C. Roby and Catherine Sease for servation and historic preservation.

ECORD Managing Senior Editor Karen in has been awarded a 1994-95 Loeb Fel- ship for independent study at Harvard's aduate School of Design.

he first U.S. Institute of Theater Technolo- awards for architecture have gone to dmore, Owings & Merrill for the Murray eater renovation; Barton Myers Associates the Cerritos Center for the Performing s [RECORD May 1989]; Prentice & Chan, lhausen for the John Tishman Auditorium he New School [RECORD LIGHTING, May 3]; ELS/Elbasani & Logan for the Fair- d Center for Creative Arts; and van Dijk, e, Westlake with Beyer Blinder Belle for Temple Hoyne Buell Theater at the nver Arts Center. Merit awards went to igh Architects for Caroline's Comedy eater Club, and BOOR/A with Barton Myers sociates and ELS for the Portland Center the Performing Arts.

ne AIA has chosen Harry C. Hallenbeck its Kemper Award, and Ki Suh Park for Whitney M. Young Jr. citation.

bal Links

ternational Design Exchange has been med by Gensler and Associates, Telesis ernational, and Japanese interests. Head- rtered in Minato-Ku, Tokyo, INDEX will vide building, office, hospitality, and retail ign, and strategic facilities planning.

ne Hillier Group has been selected as the designer/architect for a $700-million lney [Australia] Harbor Casino Project.

ved

ger Mandle, former deputy director of National Gallery of Art in Washington, ., has become the 15th president of the de Island School of Design.

harles E. Hamlin, public relations execu- and former RECORD associate editor, has n named to the newly created AIA post of president of public affairs.

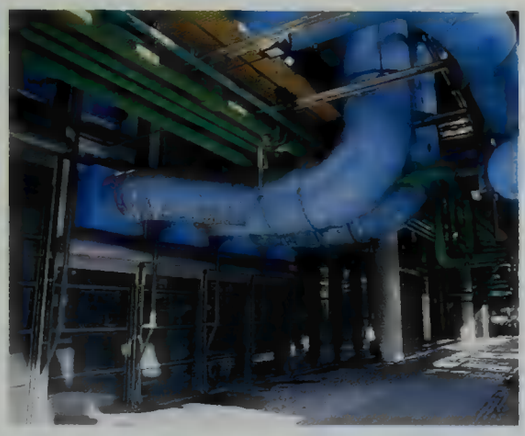
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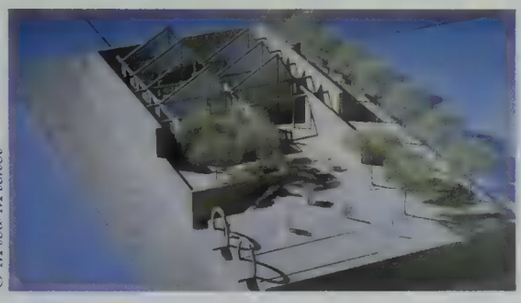
chitect Elissa Aalto, wife and co-worker lvar Aalto, died in April at 72.

awrence Anderson, former MIT Architec- and Planning dean, died in April at 87.■

Paris

Pompidou Combines Face-Lift with Site and Interior Reorganizations





© Mica Michel

The Pompidou's peeling paint and cracking walls (top) are under renovation. A street-level garden site will be added (above).

Frayed and peeling at age 17, Richard Rogers' and Renzo Piano's high-tech Centre Georges Pompidou is undergoing a major renovation. Lighting tests to complement a full exterior repainting are underway, along with a reorganization that will close parking ramps, banish tour buses, and create a new northern entrance and a true front sidewalk. Piano's Paris office, in consultation with Rogers, is overseeing the work, including a new design and street-level garden site protruding from the main building for the previously underground Brancusi sculpture studio. The bulk of the $100 million job concerns the interior, where the flexible-building concept has given way to the practical needs of an established cultural institution serving 25,000 visitors a day. The museum will remain open from 1997 to 1999 as the interior is reprogrammed to gain extra space for the nation's modern art collection, improve circulation and maximize the open entry floor, used today as a campground by young tourists and the homeless. By 1999, visitors will be expected to pay to ride the plastic-enclosed escalators to upper floor exhibits. *Claire Downey*

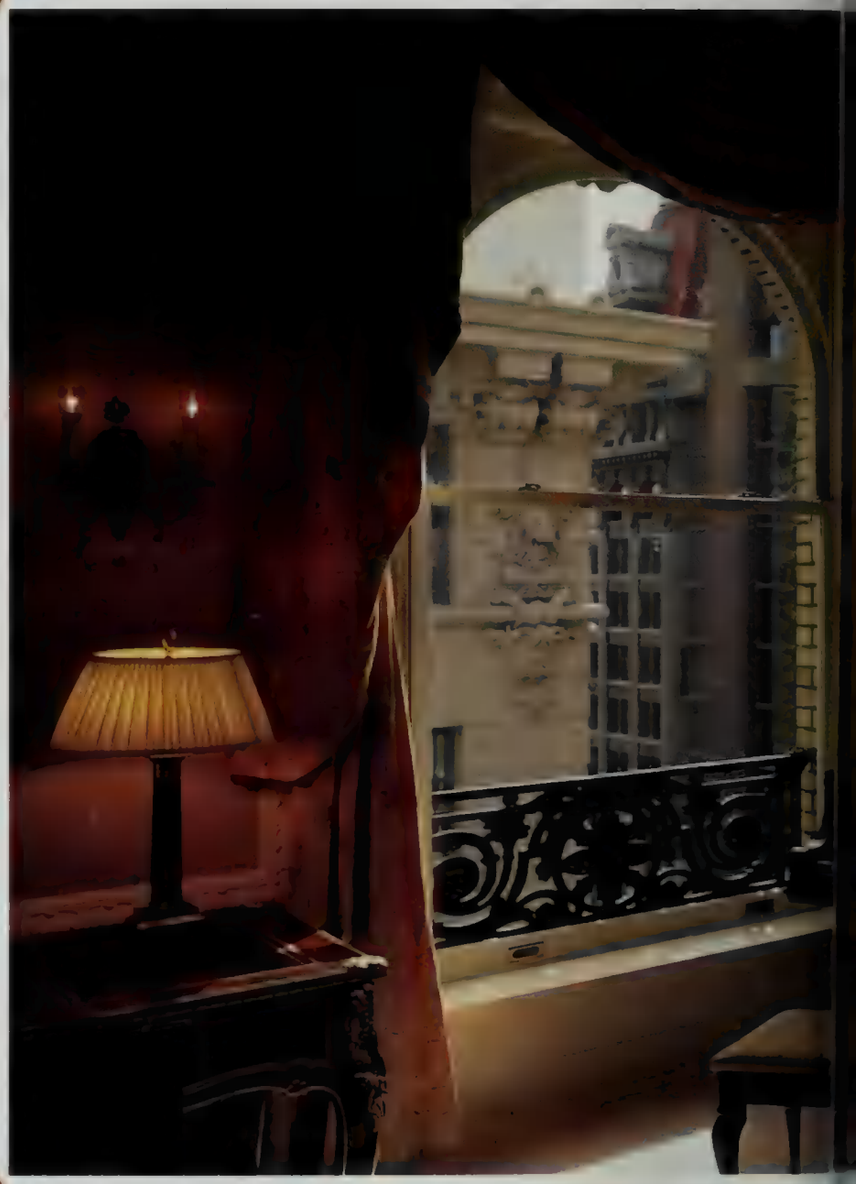
Los Angeles

Pei Cobb Freed's UCLA Management School Refers to Historic Campus Core



Under construction at UCLA is the 270,000-sq-ft Anderson Graduate School of Management by Pei Cobb Freed and Partners with Leidenfrost/Horowitz & Associates. The facility distributes several functions into a complex of buildings carved by outdoor spaces. Pedestrian routes respond to campus axes while accommodating steep grade changes. The complex maintains a modest scale and pays close attention to a diverse context, including the historical Italian-Romanesque campus core. *M. de V.*

IT'S HARD ENOUGH TO GET ONE ROOM AT THIS HISTORIC HOTEL. IMAGINE WHAT



Since 1875, the Sheraton Palace Hotel has been one of San Francisco's most beloved institutions. So when its restoration was being planned in 1989, every effort was made to preserve the details of its original design. Among other things, that meant the replacement of nearly 600 windows. And because of their experience in such projects, Marvin Windows and Doors was chosen. First to receive attention from Marvin and their local distributor were the hotel's graceful curved glass windows, an area in which Marvin's expertise is particularly well kn



No less of a challenge were the hotel's 585 aging double-hungs. Each demande th same craftsmanship and attention to detail in order to maintain sightlines and replicate the historical profiles of the originals. And to guarantee their durability and consistency, each would have to incorporate the same performance features, too.

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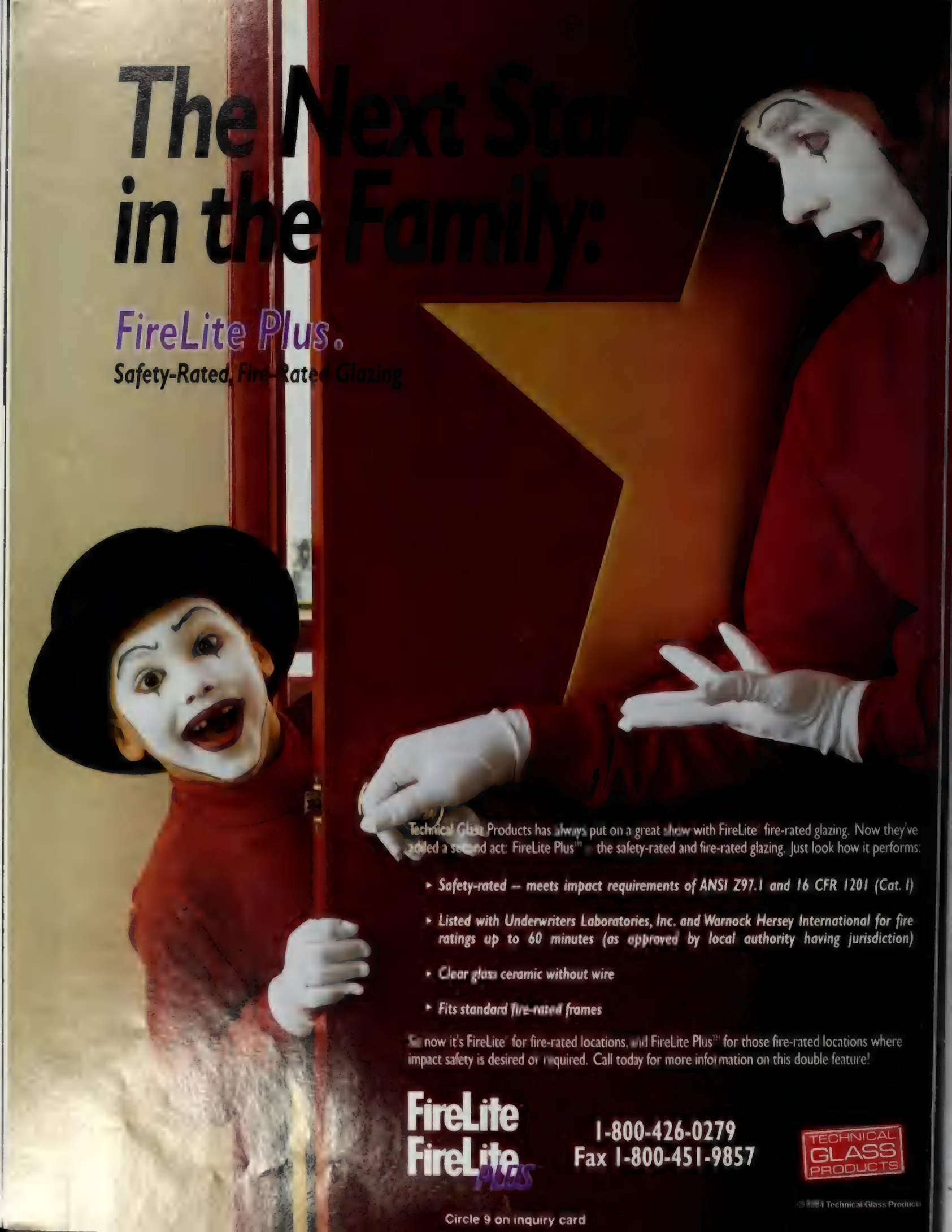
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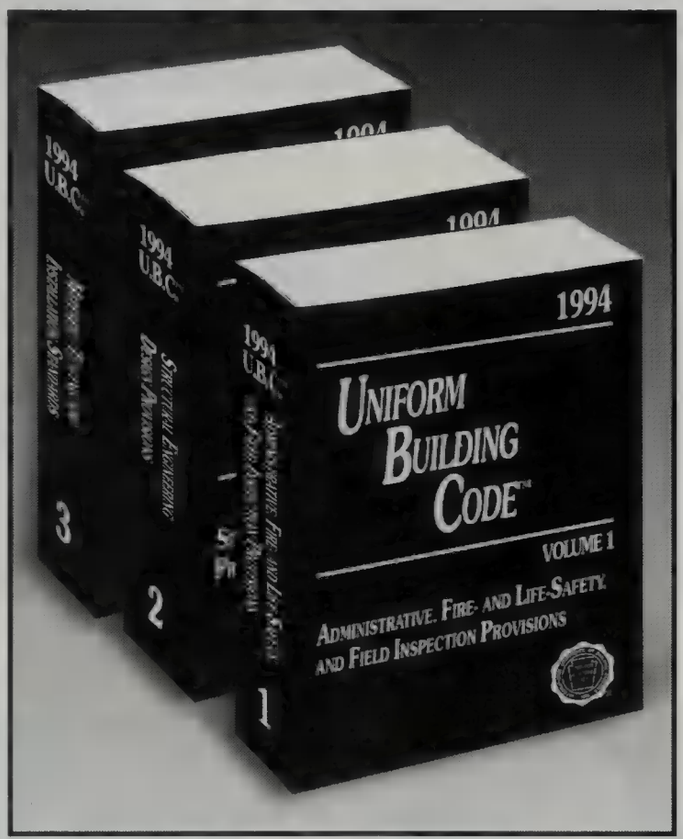
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reaking Down the Walls: senman on Display

In a new book and an exhibit at the Canadian Centre for Architecture, Peter Eisenman forces us to look at architecture in indirect ways.

ies of Artificial Excavation: The rk of Peter Eisenman, 1978-1988, *ted by Jean-François Bédard. New York: zoli, 1994, 236 pages, $60 (hard), $35 per).*
hibition at the Canadian Centre for hitecture, Montreal, March 2-June 19, ated by Jean-François Bédard

iewed by Andrew Anker

shing her arm through a small wall ning toward a gold model of Venice, the year-old girl exclaimed "Regardez les i choses! Regardez les mini personnes!" ook at the little things! Look at the little ple!") and understood at least one aspect 'eter Eisenman's "Cities of Excavation" ibit at the Canadian Centre for Architec- e. Rather than relying on drawings and lels to explain the work on display, Eisen- n and curator Jean-François Bédard use architect's aggressive installation, an rtion into the existing gallery, to make us his architecture. The importance given to eriencing this exhibition is especially resting given Eisenman's earlier search a conceptual architecture, one that ight a space for [itself] outside the tradi- al parameters of the sensual and the t," as Michael Hays explains in the exhibi- 's catalog.

he exhibit, it is the installation, not the k on display, that dominates. Eisenman s not allow us to view his cities of excava- without effort. As we move through the r of two shifted and superimposed Greek ses, he gives us only fragmented views ugh small wall openings. These windows, ed at different heights, sometimes uire that we crouch, at other times that peer in from awkward angles, to see parts ne models concealed behind the walls. By ing us to interact physically with the e, Eisenman assures that the installation sforms our perception of his projects.

exhibit and the book of the same title s on four projects that Eisenman and nman/Robertson Architects designed for in Europe and the U.S.: a housing and urban design for the Cannaregio section of Venice, a housing block on Friedrichstrasse in Berlin, an art museum at the California State University at Long Beach, and a garden at Parc de La Villette in Paris.

While his exhibit design highlights the installation over the displayed work, the accompanying catalog provides a thorough presentation of the four projects that form the heart (or cross) of the show. The projects are discussed in essays by Alan Balfour, Yve-Alain Bois, Jean-Louis Cohen, Kurt Forster, Michael Hays, Arata Isozaki, and Fredrick Jameson. The authors challenge Eisenman's interpretation of his work, but they often do not follow through with their critique. For instance, in discussing Eisenman's attempt to distance himself from the design process, Bois questions his seemingly incongruous use of free-hand sketches. But Bois does not offer an answer, nor does he speculate on the connection between these expressive sketches and Eisenman's recent attraction to computer-generated drawings. It is unfortunate, for here is one of Eisenman's apparent contradictions that tells us much about his architecture.

Differences between the exhibition and the catalog indicate another contradiction, one which signals a shift in Eisenman's work. The beautifully produced catalog presents the drawings and models with a straightforwardness that contrasts sharply with the installation's oblique walls and fractured views. In fact, the catalog does not document the exhibition at all, just the work exhibited. There are no photographs or drawings of Eisenman's installation, nor is it discussed in any of the essays.

The disjunction between exhibit and catalog, though, is appropriate since each documents a distinct phase of Eisenman's career. The "Cities of Artificial Excavation" projects, dating through 1988, represent a period in which Eisenman derived architectural form by "excavating" a site's fictional history. For example, in Venice he unearths Le Corbusier's unbuilt hospital project and uses it as the starting point for his design. More recently, he has begun reincorporating traditional architectural motifs, such as poché, which finds its way into the CCA exhibition as a raised platform for models located in the space between the two crosses. Indeed, Eisenman's use of a Greek cross, a form associated with Renaissance humanism, suggests that his long-term critique of architecture as a person-centered practice may be taking a new turn. As the catalog does not document the exhibition, we must wait for future publications to address these new issues in Eisenman's work.■

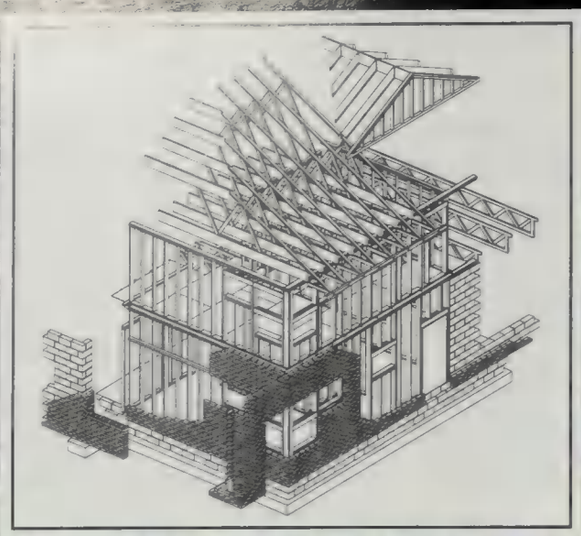


© *Michel Legendre/Canadian Centre for Architecture*



The display of Eisenman's Venice project is in gold (top), while that of his university art museum in Long Beach, California is done in green (above).

rew Anker is the Fay Jones Professor of itecture at the University of Arkansas.











All models created with form•Z. Below: Le Corbusier's Ronchamp by Mark Niemi, auto•des•sys, Inc., rendered with form
Above, clockwise from top left: Model by Sean Thompson, Heather Cross, and Charlene Tu, University of Cincinnati; Build
by Sullivan Gray Bruck Architects, model by Marty Clayton, Electric Pictures, Columbus, OH, rendered with InfniD; Rich
Bofill's building at Marne-la-Vallee, France, model by Mitsuyuki Ishi, Tokyo, Japan, rendered with ElectricImage; Bathroom
George Chang, George Chang Design, Emeryville, CA, rendered with Strata StudioPro; Hyatt Hong Kong, model by Ten
Williams, See³, Culver City, CA, rendered with ElectricImage.

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Circle 6 on inquiry card

ne Moving Hand Hath Drawn...Its Last?

isioning Architecture: An Analysis Drawing, *by Iain Fraser and Rod mi. New York: Van Nostrand Reinhold, , 194 pages, $30 (paper).*
y Architects Draw, *by Edward bins. Cambridge: MIT Press, 1994, 317 s, $40.*
itectural Drawing Masterclass, *by Porter. New York: Scribner's and well Macmillan, 1993, 160 pages, $50.*

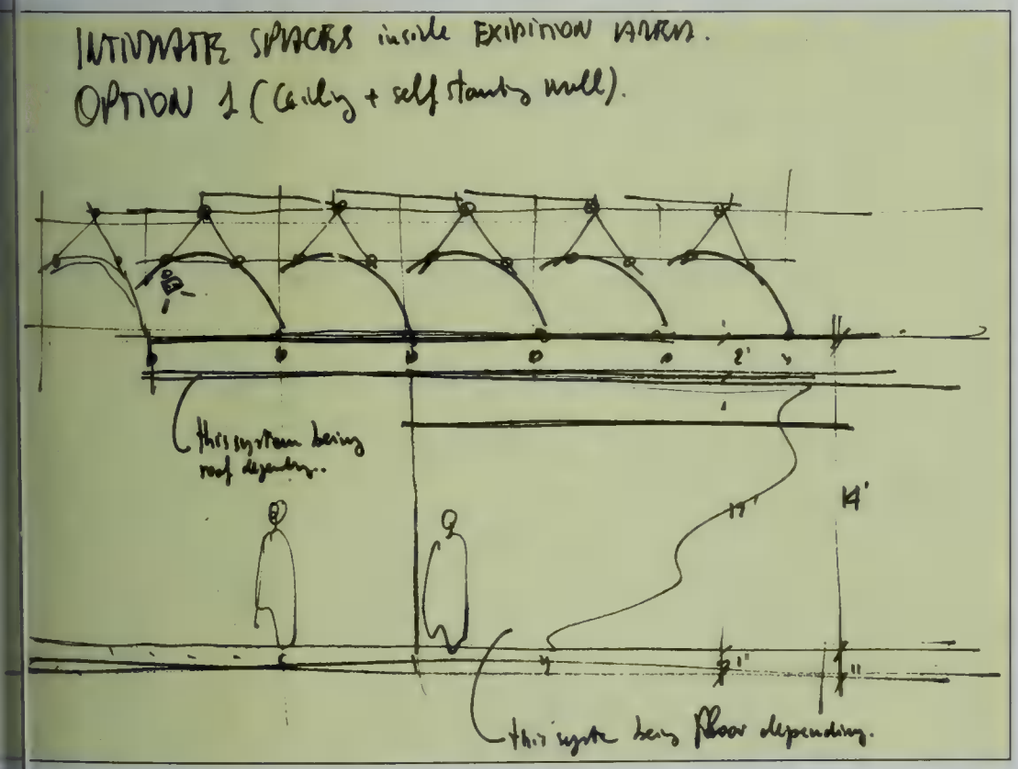
ewed by Michael Webb

ping away at my Macintosh, I can't help vonder how the development of comput- ded design is impacting (terminating?, nding?) the noble tradition of handmade itectural drawing that is the subject of ooks reviewed here. For the authors of e books, CAD is, it seems, only a jolly n fellow, a breaker of hearts. In their , Fraser and Henmi dispose of the topic o paragraphs, while Robbins and Porter ess it only in passing. Yet in many archi- ral offices, drawing boards gather dust.

ael Webb, once a member of the Archi- group, is an architect in New York.

What is the nature of this technological beast? For one thing, it seems to proclaim the primacy of the moving image over the static one; and hence recalls the work of early photographers like Muybridge and Marey, whose art concerned the capture of motion. CAD and the attitude of mind it engenders inevitably affect the way we think about architecture itself. The building as a work of art becomes most interesting to look at when it is most at motion—during construction and demolition. How can experiencing the building as built ever match swooping through it at high speed in the virtual reality of the computer image? Back around 1965 the boys in Archigram complained about "buildings [that] just sit around... doing nothing." So we experimented with flexibility, expendability, and plug-in design, and put those cranes everywhere in our drawings.

But CAD involves a disconnect between process and product. The hand doesn't touch what is being made; thus skill is dead. If every printout is a masterpiece of technique, are there no more masterpieces? Was it not joyous to skillfully lay a graded wash on paper? The books reviewed here focus on work of those who have touched the materials, and so may be read as histories. In this way they need not be faulted for ignoring the cataclysm.



ing by Renzo Piano of the Menil Collection Museum from Why Architects Draw.

Envisioning Architecture is a fascinating read, a comprehensive survey that should be read by all architecture students. Particularly good is the first chapter, which explains how some familiar buildings of Le Corbusier came to be. The authors lead us from conceptual sketches—some of which this reviewer had not seen before—to final presentation drawings. It is as if we are looking over Corbu's shoulder as he draws, sharing in the decisions he makes; here a moment of inspiration, then gradually the familiar form takes shape. As with all survey books, however, the more seasoned among us may become frustrated at the need to gloss over certain subjects. For example, the chapter on perspective ends just as it ventures into interesting territory.

In *Why Architects Draw*, Edward Robbins, an anthropologist who has written about the education of architects for two decades, examines the genus *homo architectus* by interviewing a group of 10 specimens, among them Renzo Piano, Rafael Moneo, and the late structural engineer Peter Rice. I suspect that since to be an architect is to draw, architects don't particularly feel the need to ask why they draw. A baker doesn't ask himself why he bakes, after all. Nevertheless, I think it is revealing to read the reactions of a relative outsider to the drawings and thoughts of architects whose work you respect.

Architectural Drawing Masterclass makes one wonder whether it was intended to grace the coffee table or the kitchen counter. The answer seems to be "both." Quality color reproductions of contemporary architectural drawings by the usual suspects (e.g. Eisenman, Hadid, Libeskind, and Woods) make the book perfect for display in the living room. At the same time, the written text explains how and with what media the drawings were executed—creating the impression (reinforced by the book's title) that you too can churn out just as good stuff simply by following the recipe provided. Since these drawings weren't done by computer, replicating their quality is not simply a matter of pushing the right keys. ■

Calendar *continued from page 2*

June 13-July 22

The Society for the Preservation of New England Antiquities (SPNEA) presents an intensive program of field trips, and lectures, in architectural history. Academic credit is offered through Tufts University. Write Myron O. Stachiw, Director, Research, Education, and Interpretation, SPNEA, 141 Cambridge Street, Boston, Mass. 02114, or call 617/227-3956.

June 16

"An Evening with Fumihiko Maki," part of the Japan Society's Distinguished Lecturer Series, 33 E. 47th St., New York City. Tickets $10; $8 for members, students senior citizens. Call 212/752-3015.

June 16

Pratt Center for Advanced Design Research, New York City, presents a seminar on "When The Going Gets Tough–Access to Transportation," with information on barrier-free design and the Americans with Disabilities Act. Call Lauren W. Friedman, 212/229-4589.

June 16-19

Canadian Centre for Architecture presents "Anyplace." How, for example does architecture affect Singapore or Bosnia or Inuit territories as emerging political entities? Call Brigitte St. Laurent Taddeo, 514/939-7000.

June 16-September 5

"Solutions: Reinventing Public Housing," an exhibit and symposium series focused on the synthesis of architecture and planning in Chicago's revolutionary Scattered Site Public Housing Program. Call D. Jeffries 312/938-1969. Press: Marilyn Katz, 312/9440-5706.

June 19-September 4

The Minneapolis Institute of Arts presents "Minnesota 1900: Art and Life on the Upper Mississippi 1890-1915. Contact Marketing and Communications, 612/870-8171.

June 20-23

AEC Systems '94 computer and management conference and exhibit for design and construction professionals, Washington Convention Center, Washington, D. C. Call 800/527-7943 or 203/665-0831.

June 22

Virtual/Design '94 held in conjunction with AEC Systems '94 presents "Virtual Reality in Design". Call Sharon Price, 800/342-5718 or fax 203/666-4782.

June 21-23

Facilities '94, the high-tech show for facility managers, held in conjunction with AEC Systems '94, presents conferences and tutorials sponsored by IFMA and the IBI. Call Sharon Price, 800/342-5718 or fax 203/666-4782.

June 22-24

The City of Manchester will host Global Forum '94. The theme will be "Cities and Sustainable Development" to be held in Manchester, United Kingdom at the Manchester Public Forum. Write: Global Forum '94, Eastgate, Castle Street, Castlefield, Manchester M3 4LZ, UK. Call 44-61/234-3741 or fax 44-61/234-3743.

June 22-24

Society for Computer Integrated Building Sciences (SCIBS) "Symposium on Interprofessional Communication and Project Coordination within the Building Industry." Write James Reidy, Booz-Allen & Hamilton, Inc., 1725 Jefferson Davis Highway, Suite 1100, Arlington, Va. 22202. Call 703/412-7648.

June 22-25

The International Tile & Stone Exposition will be held at the Anaheim Convention Center in Anaheim, Calif. Call 407/747-9400.

September 5-9

"Making Cities Livable" Conference, focusing on the design of new urban neighborhoods. An exhibit accompanies the conference in Freiburg-im-Breisgau, Germany. The city is developing an extensive new district at



selfeld on the outskirts of Freiburg, with goal of creating a neighborhood with an an character. For further information ut exhibit categories and the application cess, write Suzanne Crowhurst Lennard, nference Organizer, IMCL Conference,). Box 7586, Carmel, Calif. 93921 or fax /624-5126; phone 408/626-9080.

tember 18-23

oitat '94, Edmonton, Alberta, Canada. ew Frontiers in Housing and Planning." · more information, fax 403/487-2417.

npetitions

ıe Society for Marketing Professional Ser- s Annual Awards Program. The most standing submission will be honored with a st of Show" award. Deadline is June 3, 4. Call 800/292-7677 for more information.

ıe Precast/Prestressed Concrete Insti- 's Professional Design Awards Program for Entries deadline is June 30, 1994. For e information call 312/786-0300.

stitute of Business Designers is accepting ies for its product design competition. The dline for submission is July 1, 1994. Call y Rose Mazza, 312/467-1950.

ıe AIA New York Chapter 1994 Design ards Program deadline for receipt of entry forms and fees is 5:00 p.m. July 6, 1994. Work anywhere by New York City architects is eligible. Call Judy Rowe at 212/683-0023.

▪Cedar Architectural Awards entry deadline is July 1. Buildings using Western red cedar products are eligible. Call 604/687-0266.

▪Society of American Registered Architects announces its 1994 National Design Competition; deadline is July 22, 1994. It is open to all SARA members and non-members. Call Stan Banash, 312/763-5767.

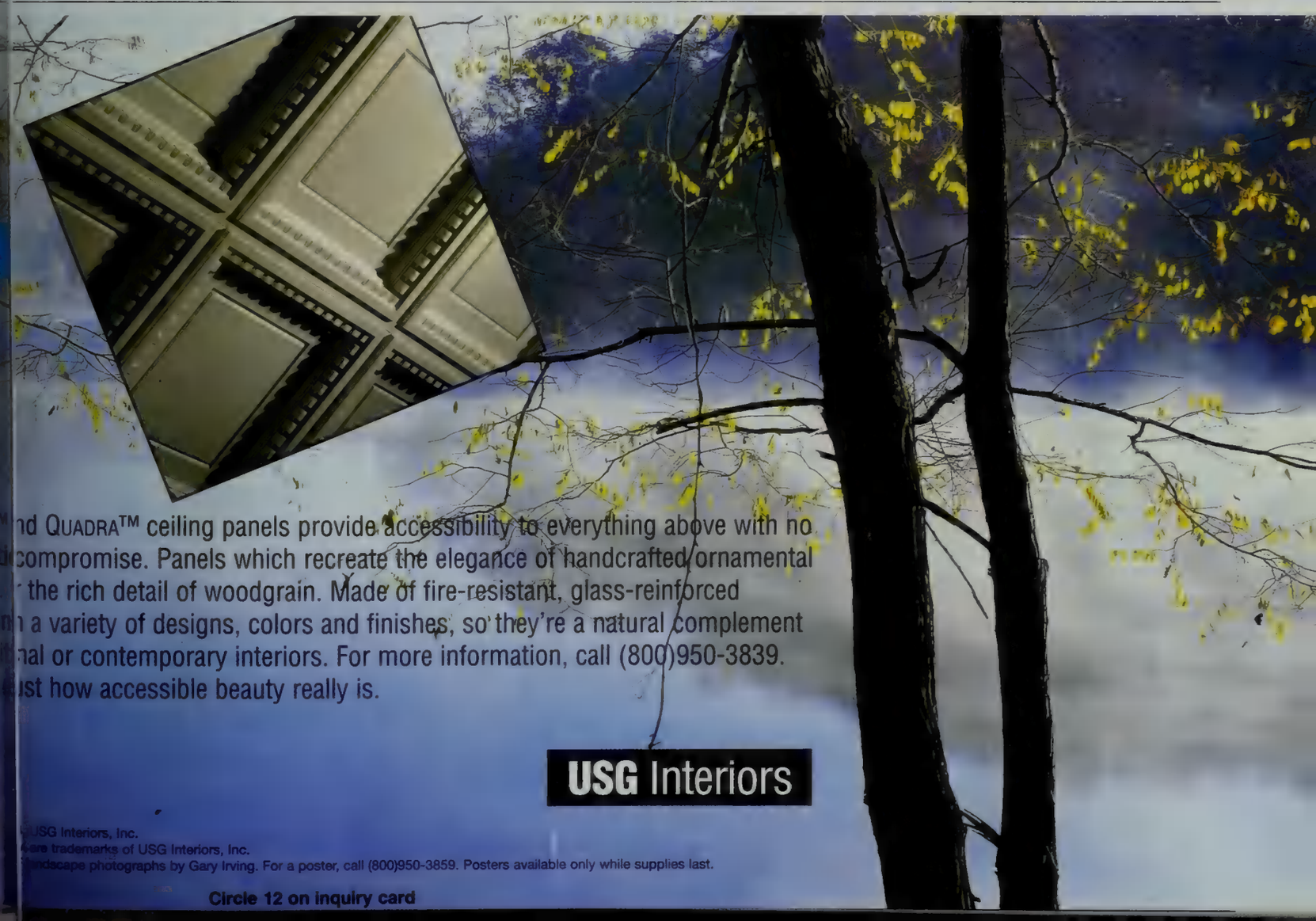
• Application forms for the Urban Experience program to work out and present new ideas for urban design and redevelopment of the city of Kiev, Ukraine, are available. Final registration is during the month of June 1994. The program is organized in three stages, with August 1994 the date for problem definition and concept development. For details and a form, fax Dean of Architecture Faculty, Ukrainian Academy of Arts, 20 Smirnova-Lastochkina Street, 252053 Ukraine (+7044) 212-1946 (office) or phone (+7044) 225-5101 (home).■

Letters *Continued from page 2*

Looking back, I wish I had taken more time off earlier to spend with my lover. I wonder how accommodating we would have been to an employee in the same situation? This can be extremely difficult if the employee is gay and in the closet and worried about homophobia in his workplace. AIDS is preferably treated at home most of the time, even at the late stages, but it takes a lot of time and support to make it work. Employees can participate in the care of friends and lovers.

People in my support group usually work too long, often giving all their "feeling good" time to work. A better standard for the person who wants to continue working might be giving half of quality time to work, but this poses major problems with most disability insurance, which doesn't allow for part-time disability. As treatments and prophylaxis for infections are developed, the length of full-blown AIDS has been increasing, and hopefully some day SOON, people will be maintained at this stage indefinitely, if not actually "cured". In the last stage of AIDS, dealing with infections consumes all

Continued on page 61



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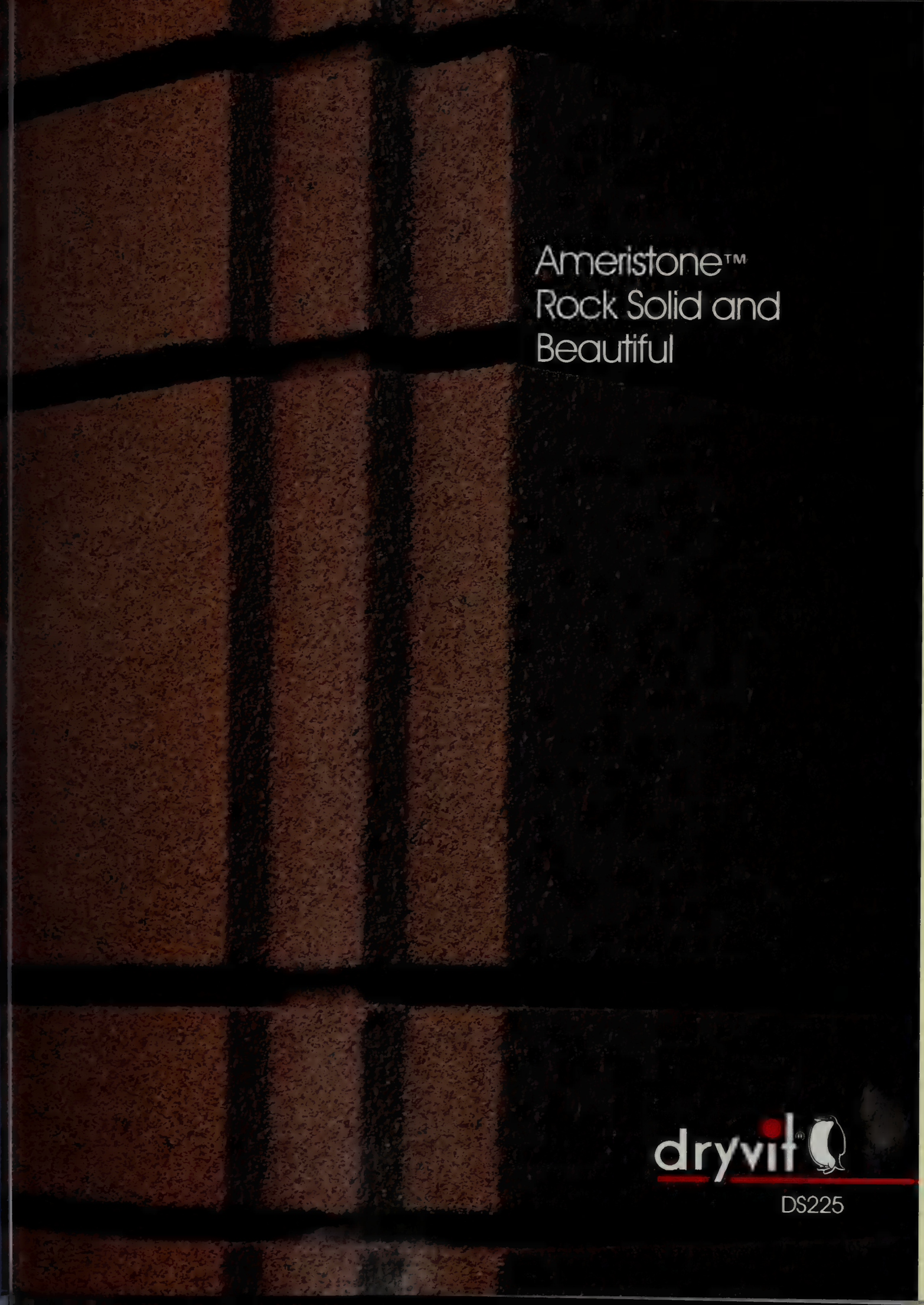
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As with all photographic reproductions, actual colors may not be faithfully reproduced. Final selection of Ameristone colors should be made from contractor-submitted samples. Ameristone is a blend of natural aggregates; minor color variants can occur.

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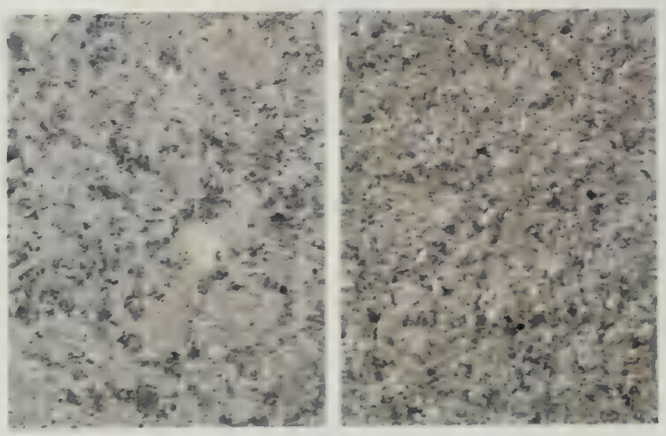
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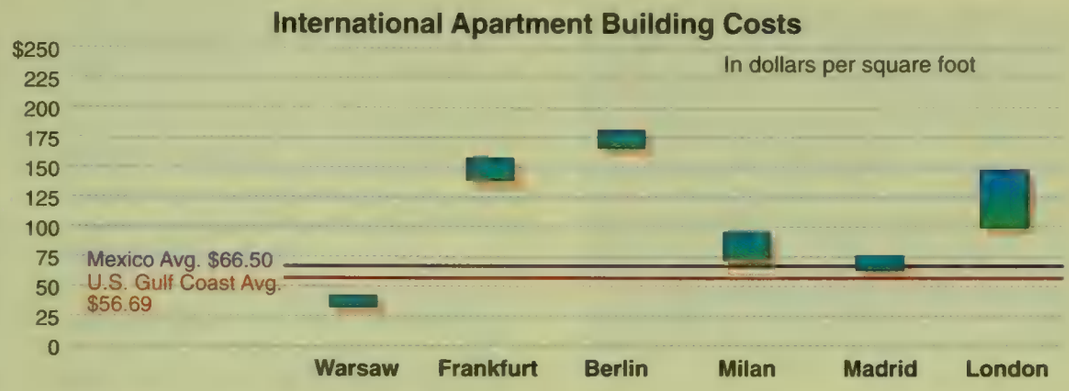
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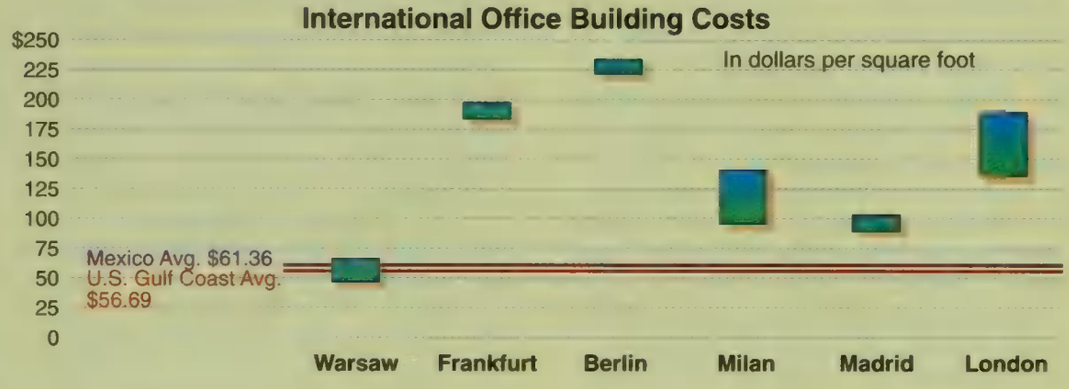
licators

aring U. S. and international costs

h clients tend to think it costs too much d, American costs in fact look quite iable compared to many international ts. With much of Europe and Japan in ough of an economic recession, though, f these 1993 numbers may move down- Another factor moderating European is the expected emergence of competi- astern European producers. Some eaveats: The U. S. benchmarks may state American costs for many ts. U. S. Gulf Coast construction costs ely to be among the nation's lowest. ternational office costs include raised (rarely specified in the U. S.), carpet, ded ceilings, hvac, lighting and power, t drywall. International apartment con- on is "multi-story with elevators d to a high standard," which may be than what is typically built along the Gulf Coast. And the closeness of the an numbers to American costs is ion of the much smaller size of the an projects. If the size of projects was lent, Mexican costs should appear to be ■



Source: European figures: Gardiner & Theobold, Inc., New York City, Atlanta, and London; Mexican and U.S. averages: Conteo, S.C.; all courtesy ENR



er prices' rollercoaster ride

ightening supply and increased d, skyrocketing timber-product prices otten a great deal of attention. Prices, er, have declined as well as risen; the t prices occur in early spring when g-supply houses stock up. Surprising- wood has tracked structural wood ; even though it relies less on North- mber (which is in tightest supply). By rison, most other commodities (con- lock and gypusm board are shown) een only minor price movement. ■



Source: Engineering News-Record Construction Economics Dept.

Profession Month

• Coping With Natural Catastrophes: Though architects have long contributed to disaster relief and recovery, they have unique skills to apply in the enlarging field of disaster mitigation. The latest in our Agenda series. *Page 38*

• The Computer As Presentation Tool: In its first Computer Delineation Awards, RECORD challenged readers to "silence the skeptics" by showing their best electronic design presentations. We present the winners and an impressive range of entries. *Page 42*

• Primavera Goes Graphical; Hayes New Superfast Modem: Our computer reviews feature project-management software that has new flexibility and a communications device that's a real breakthrough. *Page 50*

• Tile and Stone Mosaics: Our Products pages feature ancient materials that now offer more design flexibility and lower cost through new technology. *Page 52*

Closet Conundrum: How "Out" Can the Design Professions Be?

Several years ago, I was touring the office of a large midwestern architecture firm. The drafting tables were lined up in neat rows, each desk much the same as the next. Then we came to a section where humorous postcards, splashes of color, and flowers proliferated. It looked messy and comfortable. "This is the interiors department," my guide explained. "They're all, well, you know . . . ." He elaborated, waving a limp wrist.

Had I stumbled onto the architect's gay ghetto? Or is such stereotyping the exception? This question, among others, is asked more often as gays and lesbians examine how their increasing acceptance affects or is affected by their professional lives. As part of activities this month in New York City to mark the 25th anniversary of the Stonewall Rebellion—the touchstone of gay civil rights—a symposium on the roles of gays and lesbians in architecture, "Design Pride," will take place June 24th and 25th (information: 212/960-8773). Put together by the city's Organization for Lesbian and Gay Architects and Designers (OLGAD), it is paralleled by an exhibition at the Storefront for Art and Architecture. In August, the AIA will hold a symposium on diversity in the profession, with panels on gay issues.

Discrimination: both overt and subtle

AIA Associate General Council Beth Davis says hundreds have lodged phone complaints alleging infringement of the AIA's new amendment to its code of ethics outlawing discrimination on the basis of sexual orientation. But, she says, none has been made formal. For men, being pigeonholed as "sensitive" or decorating-minded seems more prevalent than overt discrimination. "I was a project architect with several projects to my credit until I came out of the closet," claims Seattle-based architect Jeff Harris. "Then I found myself where all the other openly gay architects in the firm were, designing tile patterns for elevator lobbies."

Some, however, see architecture as a field attractive to gays and lesbians. Gary Rosard, a sole practitioner in New York says, "The profession draws people who might not have opportunities in a different kind of career. They bring a different sensibility and talent to the work." Design as a "gay profession" has a drawback, according to Steve Glassman, a Baltimore architect and gay-rights activist who helped write the code of ethics amendment. "I think it's a little like Hollywood," he speculates. "Exactly because creative people are so afraid to be identified as gay, they internalize their feelings and externalize the image of the macho male."

This image is especially difficult for lesbians, says Jane Greenwood, an associate at Kapell & Kostow Architects and the Chair of OLGAD. They have been "just about invisible," she says. "There is still an old boys' network" that she feels has denied all women their place in architectural history. "Women in general hit a glass ceiling. Being lesbian throws yet another wrench into the works." Though a number of prominent and mature practitioners are known to close colleagues and friends as gay or lesbian, only a few have publicly admitted their sexuality, and then only obliquely. Some see the resulting invisibility of gays and lesbians in the profession as pernicious. Says David Lesniak, a young architect in Philadelphia: "It's important to have role models." On the other hand, Chicago AIA chapter president John Nelson defends his right to his "they don't ask, I don't tell" policy: "My sexuality has never defined me as an architect."

"The single best thing we can do is come out of the closet—in any profession."—Barney Frank, Congressman from Massachussetts.

"The single best thing we can do is come out of the closet—in any profession," says openly gay Congressman Barney Frank of Massachusetts. "The more public we can be, the better," he continues. Architect Frank Israel responds, "this is still a 'gentleman's profession.' " Adds New York architect Ron Bentley, a partner in the firm of Bentley, LaRosa and Salasky, "There are social events, charities, and such that are based around dancing and dining, where a gay person would not be comfortable." This atmosphere of "it's just not done" seems to pervade larger firms, where there are few, if any, openly homosexual partners. "There is a feeling that you don't want to do anything that would alienate your client base," adds Glassman. "We never get the partners at our meetings of gay and lesbian architects," says Bob Hotes, head of such a group in Philadelphia. "We only get the younger designers."

A gay design sensibility?

As the wider culture has become more accepting of homosexuality, gays and lesbians are looking at how sexuality influences design. An emerging militant wing of gay culture has attempted to define "queer space." This still-inchoate theory proposes that the experience of being homosexual contributes to a unique design sensibility and methodology. To such theorists as Judith Butler, author of *Bodies That Matter*, "queerness" is inherently critical, helping to destabilize accepted social (and, therefore, physical) structures in such a way that marginalized social groups may participate more readily. Cases in point: gays as activist pioneers in restoring rundown historic neighborhoods and in glamorizing loft living. The writer Richard Rodriguez offers another view in his *Days of Obligation*, pointing out that even the so-called gay decorating sensibility has contributed to American culture: "Homosexual survival lay in artifice, in plumage, in lampshades, sonnets, musical comedy, couture, syntax, religious ceremony, opera, lacquer, irony."

Groups like OLGAD have moved from social support to become a voice for political change (embarrassing the AIA for its empty "diversity" rhetoric in a controversy over Colorado's anti-gay Amendment 2) and a new form of job network. "If somebody asks for a referral," admits architect Mark Maxwell, "I go through a list of gay and lesbian friends." Congressman Frank calls this "an important part of building solidarity and independence." Still, for many gays and lesbians, the closet door must open wider. "This whole issue didn't exist when I was in school," says Greenwood. "If OLGAD helps one or two women understand what's out there, we will have accomplished our goal." *Aaron Betsky*

Publications

Inland's Sorry Tale; End of AHF Books

Inland Architect, the venerable Midwest design journal (founded 1883), which had suspended publication for some months, may be back in business. For years it has been the only consistently published regional magazine, offering points of view—readers say—long ignored by national journals. Long-time supporter Harry Weese chose to discontinue underwriting it. The Real Estate News Corporation, of Chicago, a publisher of construction newspapers, agreed to purchase the magazine and assume its $150,000 debt. *Inland*'s future form, however, isn't settled. The January-February 1994 issue was delayed and at press time had only been mailed to some subscribers. The board, according to member Stan Allan (also chairman of Harry Weese Associates), has battled with the new owners over editorial content, rejecting the next issue. "This transition is very painful," Allan said.

Once titles in the works are completed, the Architectural History Foundation will no longer publish books. Founded by Victoria Newhouse in 1976, it won numerous scholarship awards, publishing titles that others found too expensive to produce. Some contracted manuscripts will be picked up by Cambridge University Press. *J. S. R.*



Inland Architect's July-August 1993 issue—the last before publication was suspended.

Ethics of Collecting

Wright Artifact Selloff Raises New Questions

Interest in the work of Frank Lloyd Wright has reached a new peak, thanks to the Museum of Modern Art's blockbuster show in New York City and a related look at Wright's decorative arts mounted by the Metropolitan Museum of Art. Oddly, the shows coincide with the dispersal of one of the most controversial collections of Wright furnishings and decorative arts, the National Center for the Study of Frank Lloyd Wright, assembled by Domino's Pizza magnate Tom Monaghan in Ann Arbor, Mich. Monaghan, an aspiring architecture student before becoming a fast-food entrepreneur, tuned into the 1980s power-collecting ethos and brought high visibility and free-spending fervor to the arena of Wrightiana. His arrival not only spurred prices to record levels, it also, claim some Wright scholars, encouraged pilfering of artifacts from Wright houses. "That's the constant worry an owner of a Wright house has," says Eleanor Larrabee, who until recently owned the Emma Barton house in Buffalo, N. Y., a small house on the Darwin D. Martin estate that Martin built for his sister.

Then, just as suddenly, in 1990, Monaghan stopped buying, and decided to sell off his collection. He had left Domino's to devote more of his time to Catholic charities. (He didn't entirely abandon his patronage of architecture, underwriting a new cathedral in Managua, Nicaragua, to be featured in RECORD next month.) Business conditions have not been kind to Domino's, and Monaghan has returned to the company—but not to Wright. He closed the Center's exhibit space in Domino's prairie-style headquarters. He is said by one knowledgeable source to have lost money on just about everything he sold, in part because of the sheer number of high-priced items, and in part because art-market prices were falling across the board.

What is Monaghan's legacy?

Nancy McLelland of Christie's auction house says, "people have a skewed perception of the market made by Tom Monaghan." McLelland, who created and heads Christie's 20th-century decorative arts department and is seen as the reigning expert on the Wright market, says Monaghan "supported the market for a period of two years—1987 to '88." She says Monaghan "was not bidding on the highest-priced pieces." Though his interest certainly brought a lot of material onto the market, she disagrees with those who say there was an increase in theft or vandalism, and maintains that much of the material recently made available had long been removed from its original setting by Wright homeowners, usually when remodeling.

© *JoAnne Devereaux*



Typical of Wright, his modest 20-by-40-foot San Francisco office, with its partitions of ribbed glass and redwood-faced plywood, is an integrated unity of space and objects.

The removal of artifacts from Wright buildings is especially sensitive because of the architect's integral "organic" design method. Objects are "much more significant in place than detached," says Terence Riley, director of architecture and design at MOMA, who is curator for its show. "There's obviously value in having them, but that is nowhere as important as keeping these things together."

Have Wright buildings benefited from the selloff? Yes and no. Some art-glass windows were returned to the Darwin D. Martin house on favorable terms. And Monaghan sold the tiny second-floor San Francisco office Wright shared in his last decade with architect Aaron Green to The Carnegie Musuem of Art, in Pittsburgh (above). The collection's prize art-glass windows from the Avery Coonley playhouse, however, are to be sold off individually. Interestingly, neither of the recent shows depended in any significant way on items that Monaghan collected. Other questions linger. Were his acquisitions ■ mere enthusiasm, but one that encouraged ■ destructive collecting ethic? Or has all the attention helped Wright owners, who may be able to turn renewed interest into funds for maintenance and restoration? *Peter D. Slatin*

Coping with Natural Catastrophes

Coast to coast, America has suffered more than its share of natural disasters in the past two years—from the hurricane that ravaged Miami and the flooding of the Mississippi River to the earthquake on the heels of floods and fires that wracked southern California. Disaster experts define three stages where pre-disaster planning is needed and in which architects' expertise can play a part: *response, relief,* and *recovery*. Architects are seeing a larger role for themselves in devising practices and policies that reduce structural vulnerability or speed recovery.

Architects have been deeply involved (often donating their time) in short-term disaster response and relief. More than 100 California architects, trained by the State Office of Emergency Services and coordinated by local chapters of the AIA and other groups, descended on Los Angeles. They worked 12- to 14-hour days assisting officials in quickly evaluating the safety of structures in the wake of Los Angeles's Northridge Quake.

Planning to mitigate disaster effects

Once the aftershocks fade, the waters subside, and the debris is cleared away, communities often pledge to rebuild at a better, less disaster-prone level. This process, disaster *mitigation*, is at its best a deep and often difficult rethinking of the most vulnerable construction techniques and development patterns. Old ways die hard, though, and the broad changes that experts suggest are often not palatable to victims or seen as too costly. Participants at a 1993 conference on disaster mitigation sponsored by the University of Miami and the Knight Foundation spelled out the dilemmas:

- The community solidarity that often develops immediately after a disaster quickly dissipates and is replaced by whatever splits (by income or race, for example) predated the disaster.
- Disaster victims seek above all to "get back to normal" even if that means returning to patterns that contributed to destruction. It is very difficult to convince long-time land owners, for instance, to resettle outside a low-lying area subject to flooding. People may be under stress for months or years. "It's not the time for social experiments," one participant commented. On the other hand, "normal" for some communities is the ugly reality of poverty.
- Further, normalcy is sometimes not readily attainable. For these victims it's important to be able to sustain themselves in the short term (tent cities aren't good enough) while long-term changes are put in place. (News reports breathlessly portrayed Angelenos transformed into rapid-transit devotees after the trauma of Northridge's collapsed freeways. Months later, transit ridership has returned to pre-quake levels.)
- Some communities do a good job of preparing for disasters and getting relief in. Almost no communities, though, have planned for the problems innate to long-term recovery: most prominently, how to keep fly-by-night contractors from taking advantage of victims.
- Though the Federal Emergency Management Agency (FEMA) and insurance companies have an interest in a recovery effort that reduces future risk, they have done little to encourage pre-disaster planning. There are even disincentives: FEMA emergency aid can't be used to raise flood-damaged buildings above high water or relocate them.

Rebuilding a downtown

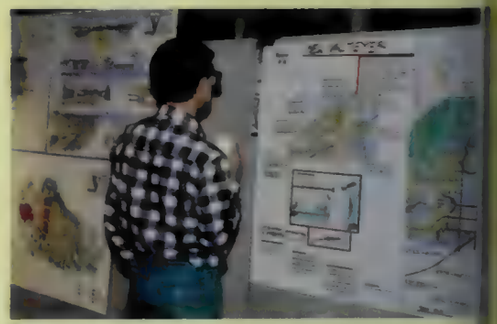
The fact is that the contributions architects can make aren't widely recognized. "Within a week of Hurricane Andrew," comments Elizabeth Plater-Zyberk, of the Miami firm, Andres Duany and Elizabeth Plater-Zyberk (DPZ), "young architects and the AIA were asking what we could do. As time passed, it was clear no one was going to ask architects to get involved. We had to hustle, ask to be involved, and ask to put on charrettes." Still, the unique perspective of architects may be the key to some community's future.

Communities sometimes seek architects' services once recovery flags. Long after the fact of 1989's Loma Prieta quake, California Emergency Design Assistance Teams (CEDATs), organized by the state AIA, were called into a number of smaller devastated

Towns respond to disasters in varied ways. St. Louis architect Jack Luer has been working as a preservation consultant to three towns hard hit by last year's floods. In St. Genevieve, Mo., an 18th-century French town with a remarkable collection of historic buildings, the sandbags still sat in April where they had been placed the previous July, Luer said. By contrast, the 19th-century Illinois town of Elsah went to work and now says Luer "looks like it did 100 years ago." Photos 1, 2, 3 (right) are from the Chariton–Palmyra [illegible] that sought a [illegible]. The residents [illegible] The [illegible]



1



2



3

Photos this page courtesy AIA St. Louis

s part of RECORD's Agenda series on expanding the influence of esign, Beth Dunlop considers architects' unique skills in disaster itigation. The biggest barrier? Convincing communities and vernment officials of the value of services offered.

wns. One CEDAT (patterned on AIA's ven- able R/UDAT's) offered successful sistance to the city of Santa Cruz, where an eady-faltering central business district s all but destroyed by the quake. Six ums—each with at least four members— idied a range of topical issues, and imately produced a 95-page booklet of rec- mendations. "Before the earthquake, ere had been a number of planning idies," explains Chris Arnold, a Palo Alto hitect and seismic specialist. "The earth- ake offered the opportunity to rethink the ture of downtown. In Santa Cruz, people ent about a year re-planning with lots of zen involvement. They spent a lot of time ing to do it right."

hile a number of local architects were com- ssioned to rebuild individual buildings, the y retained Roma design group, of San ancisco, to create a downtown plan, which s based in large part on the CEDAT plan- g sessions. "It was gratifying to see zens show up at meetings with their copy he workshop booklet in hand," commented nta Cruz architect Hugh David Carter. It's s kind of unified effort, he says, that has vinced reluctant lenders to commit ded funds. Though Los Angeles is still ounding not only from 1993-94's triple ammy of fire, flood, and earthquake, but o from the 1992 civil disturbances, it's rning from northern California. Timothy Brandt, of the Historic Resources Group, says, restoring damaged historic structures is essential. "There are ways of combining several issues to provide social services and help keep the identity of neighborhoods."

Dedication pays off in South Florida

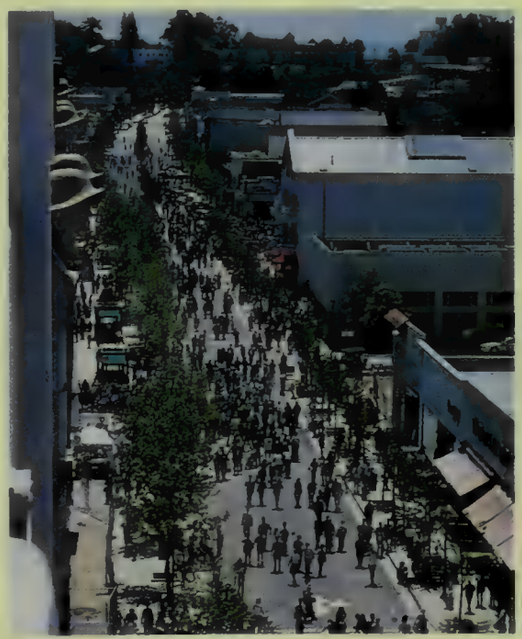
Architects created compelling visions of the future after 1992's Hurricane Andrew, but have had mixed success. DPZ and other local architects organized pro-bono charrettes to address the pathologies in land-development patterns that contributed to the huge scale of destruction in the suburbs and farmlands south of Miami. The new plan for Florida City, an agricultural town that is Dade County's southernmost, yielded a handsome scheme outlining neighborhood rebuilding while at the same time capturing dollars from tourists who typically passed through without stopping on their way to the Florida Keys or the Everglades (page 41). Though adopted in principal, the only tangible evidence so far is the commission that DPZ, A+S Architects, and CRA-Clark Architects and Engineers won for a new city hall.

About 150 architects, landscape architects, planners, and private citizens worked collaboratively for three consecutive weekends to produce a series of visionary plans in the form of 13 case studies for what they called the "New South Dade." Though this charrette—sponsored jointly by the University of Miami and Florida International University—dealt with a range of issues from ecology and hydrology (water and drainage from the Everglades are ever-topical issues in South Florida) to historic preservation, a key proposition was the division of the amorphous spec landscape into 28 distinct communities, each with a defined center. This responded to an unanticipated consequence of the storm, which was that there existed no identifiable place of refuge. (Relief workers couldn't find their way around and residents were disoriented; street signs were obliterated as were landscape landmarks such as hedges and trees (page 40). Jorge Hernandez, an architect and associate professor at the University of Miami, working with a team of architects and land planners, identified sites in each community for "village greens"—plazas fronting on such public buildings as branch libraries, clinics, or daycare centers. These would be hardened against storms and equipped with emergency provisions.

Miami architect Suzanne Martinson showed how one neighborhood could revolve around a rebuilt Caribbean Elementary School, a park, and a senior-citizens housing project (page 40). The school idea was refined in a second charrette, held just a year after the hurricane, and it's now being designed by Randa Samuels-Richter and Harper Carenno and Mateu. Martinson is doing the elderly housing. Although greeted by widespread

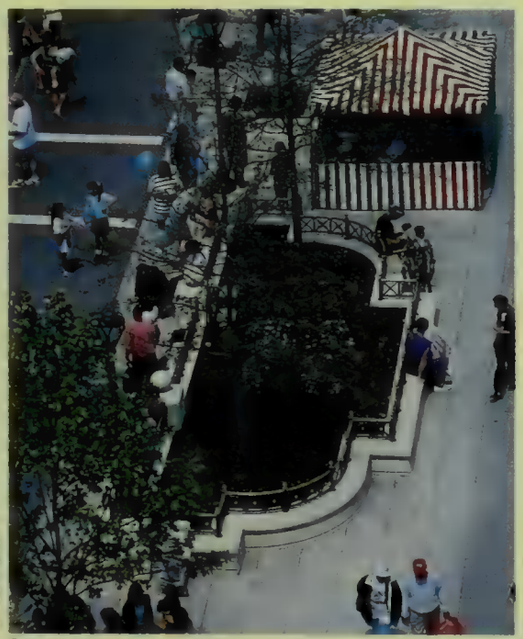


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© Ron Starr

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© Ron Starr

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"It was clear no one was going to ask architects to get involved. We had to hustle, ask to be involved, and ask to put on charrettes."—Elizabeth Plater-Zyberk on Hurricane Andrew recovery efforts.

critical and public approval, neither the Dade County Planning Department nor We Will Rebuild, the private funding agency that sponsored the South Dade charrette, incorporated such town centers into their recovery or long-term mitigation plans.

Revitalizing an agricultural district

In the year after the hurricane, the University of Miami School of Architecture worked with Dade County's Historic Preservation Division to prepare a plan for The Redland, the region's tropical agricultural district. The plan, said Margot Ammidown, who recently left her post as director of the preservation division, attempts to "create a vision of the place to enhance its absolutely unique character." The plan plays up patterns and connections in the landscape: the vernacular farmhouses, barns, and packing houses; the structure of groves and woods (opposite). Its guidelines seek to shore up the agricultural economy, while discreetly accommodating tourists. "The Redland is the last remnant of our cultural heritage—of our agricultural roots—in South Florida," explains Rocco Ceo, an assistant professor of architecture at the University of Miami, who led the study.

In Perrine, a hurricane-swept neighborhood that had long been plagued by substandard housing, crime, and commercial disinvestment, a two-day Miami AIA charrette galvanized the community. Pushed by an active community-development corporation and architect Ron Frazier, Perrine now has a rebuilt elementary school (Jimmie Allen, architect), a new land-use and zoning plan, a rebuilt and expanded neighborhood center (Architects International), funds for a neighborhood health center, and $8 million in public-housing improvements. Frazer had a 90-day contract with the county, but continued for a year pro-bono. "The main thing is to keep the momentum going," he said. "The farther you get from the hurricane, the dimmer peoples' memories get."

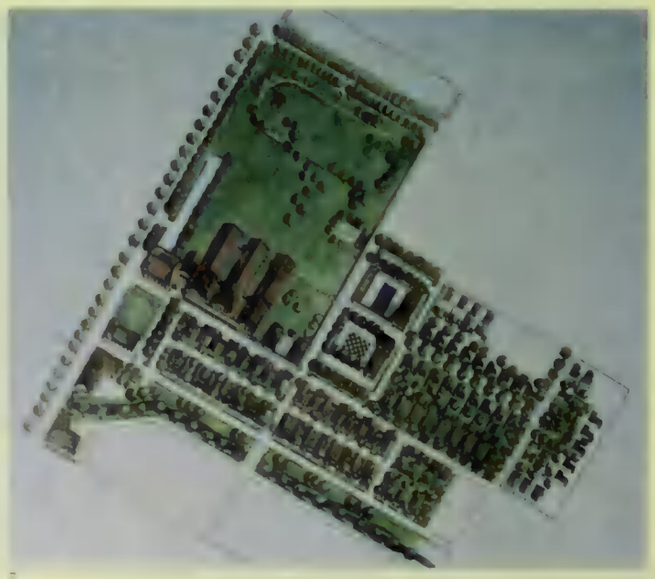
Moving a town out of harms's way

In the wake of the midwest floods, an Illinois town chose an ambitious future. The citizenry of Valmeyer, population 900, decided to move the entire town to higher ground. A suburban-subdivision type plan was quickly produced by a state agency. Then the St. Louis chapter of the AIA, the American Planning Association, and the American Society of Landscape Architects stepped into the process. In November, the three organizations hosted a competitive charrette with residents in which 11 different design teams re-envisioned the town. The winning design was produced by a team led by Tim McMinn, an architect from the Belleville, Ill., firm of FGM architects (page 38).

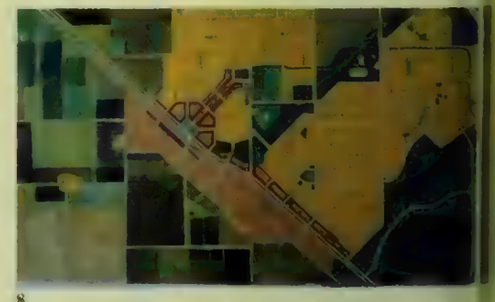
This plan, McMinn said, was aimed at maintaining "the same strength and character that had been the backbone of the commun all these years." The plan, intentionally compact and walkable, focused on a series sinkholes, transforming them into a small lake that would be part of a central park; th park in turn would be flanked by two churc es to the north and south, a civic complex t the east, and a school to the west.

Moving communities is often a less expensi and more environmentally sound alternati than protecting vulnerable neighborhoods with costly new or repaired levees. FEMA, the Army Corps of Engineers, and environ mental groups have supported town relocations and property buyouts, but have seen the attractiveness of the new Valmeye as key to getting more reluctant communit to follow suit. Though Valmeyer's citizens voted for the plan, it is at the moment not likely to happen. They have not been able t stand up to the regional planning agency's pod-subdivision layout. "It was not just arc tecture, not just planning," said McMinn. "We really wanted to give them their town back because they lost everything. To us it was a missed opportunity."

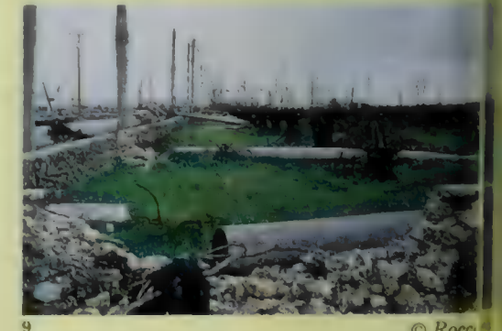
Yes, there's reason to lose hope about disas ter mitigation. On the other hand, the flood gates were once again erected at the St. Louis Arch the same April day McMinn w interviewed. By mid-spring, the Mississip was already rising. Again. *Beth Dunlop*



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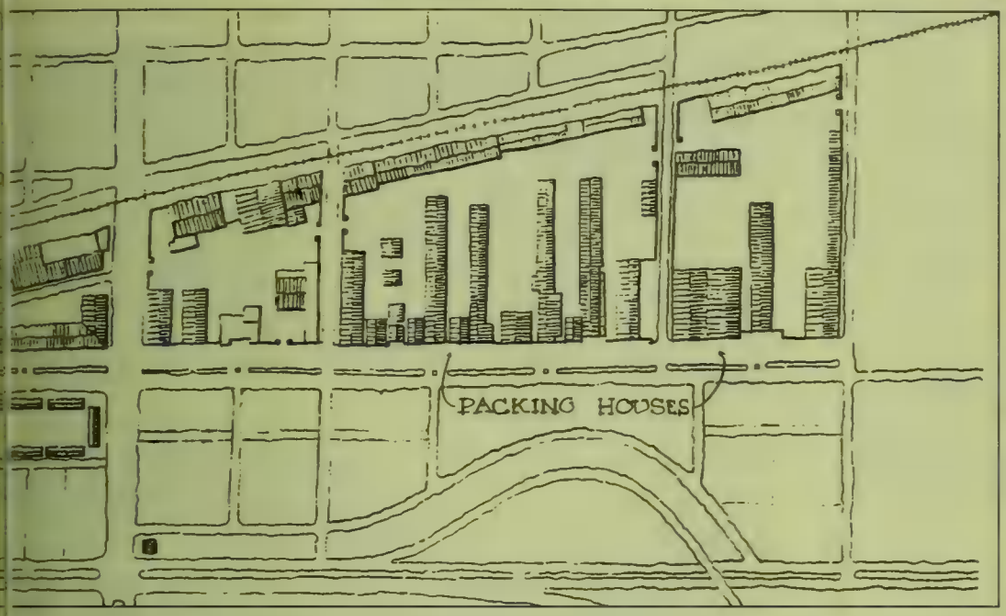
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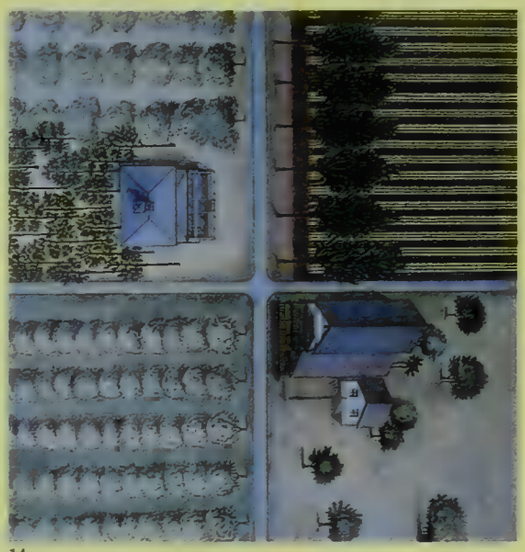
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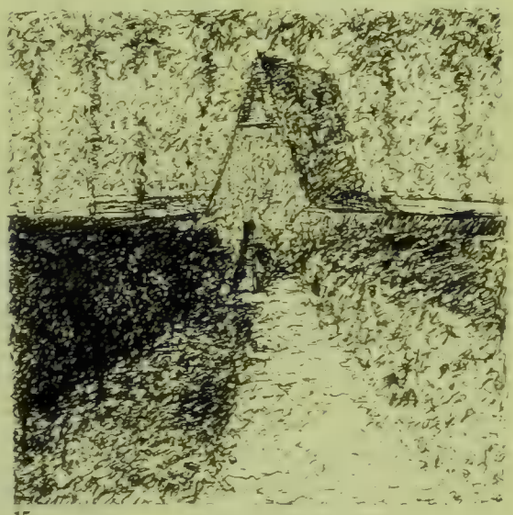
To lure tourists, the Plan for Florida City envisions retail-filled headhouses (12) attached to existing packing houses (11) and a visitors center (13). A new town hall (10) has been commissioned. The Redland





14

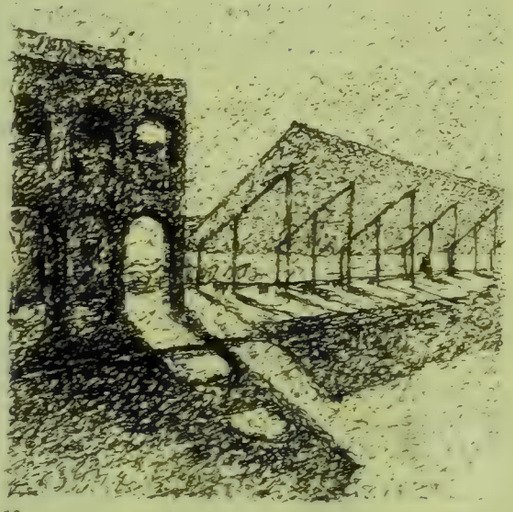




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16

Preservation and Tourism Plan draws on the vernacular landscape (14), in proposing a new market (15) and bus stop (16).

The Computer As Presentation Tool

It seems only yesterday that what passed for computer renderings featured mostly jaggy wireframe perspectives in oversaturated colors dotted with blobs where too-dense line patterns clogged. No more, as many of the 90-some entries in RECORD'S first Computer Delineation Award show. (A sampling of the impressive variety of non-winning entries is shown opposite; the three winners are shown in the following pages.)

The jury members were selected for their experience in design and presentation, not specifically for their computer savvy. Architect Lauretta Vinciarelli teaches at Columbia University. Her watercolors of imagined spaces were shown in RECORD'S September 1993 issue. Paul Stevenson Oles is a partner in Interface Architects in Newton, Mass. He is on the Advisory Council of the American Society of Architectural Perspectivists. Karen Bausman is a partner in Bausman-Gill Architects, a firm whose design work often employs evocative model/sculptures. Paola Antonelli is Associate Curator in the Department of Design at the Museum of Modern Art in New York.

The jury was asked to choose selection criteria. Their consensus was that winners should use the computer in a way that "lets you investigate that which you couldn't otherwise," as Lauretta Vinciarelli put it. Karen Bausman felt the presentations "should show a mind at work." The jurors didn't always agree. Paul Oles suggested the panel "should not get hung up on the connection between representation and what is represented." Other jury members could not premiate any entry that they felt was poorly designed, however brilliantly rendered.

The winners and additional entries will be exhibited at RECORD'S booth at the AEC/Systems '94 computer show in Washington, D. C., June 21-23. We're looking for your comments—by mail (address on letters page) or fax (212/512-4256)—so that we can improve next year's award program.
James S. Russell

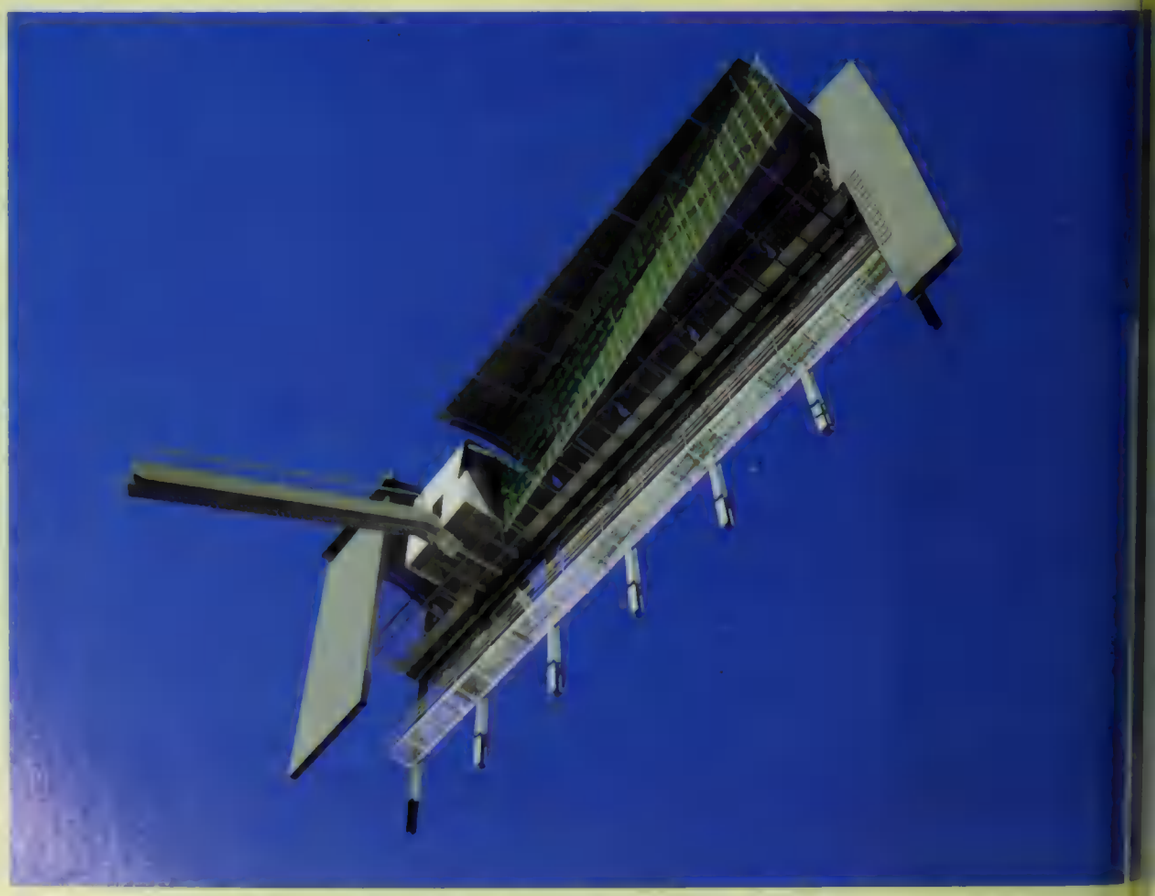
From Simple to Sophisticated: A Sampling of Entries

1. Beach house in the Hamptons, by Adam Cohen, Lee Harris Pomeroy Architects, New York City.
2. Children's Discovery Museum, by Robert Frank Associates, San Francisco, for architects Spencer Associates
3. Yacht Club, by Roger Patto Janssen, West Palm Beach, F
4. A rowhouse retrofit propos by Barry Yanku, Brooklyn, N
5. Graphics for Office Buildin Renovation, by Architrave, L Chicago.
6. Oral-B Corporate Headqua ters, by DES Architects Engineers, Redwood City, Ca

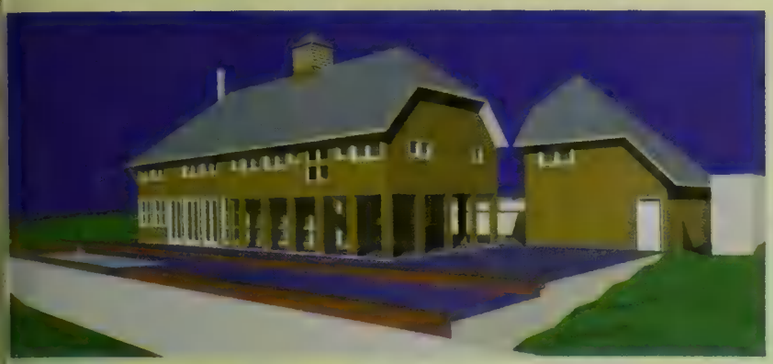
For hardware and software information, see page 161.

Honorable Mention: Timothy Collins Douglas

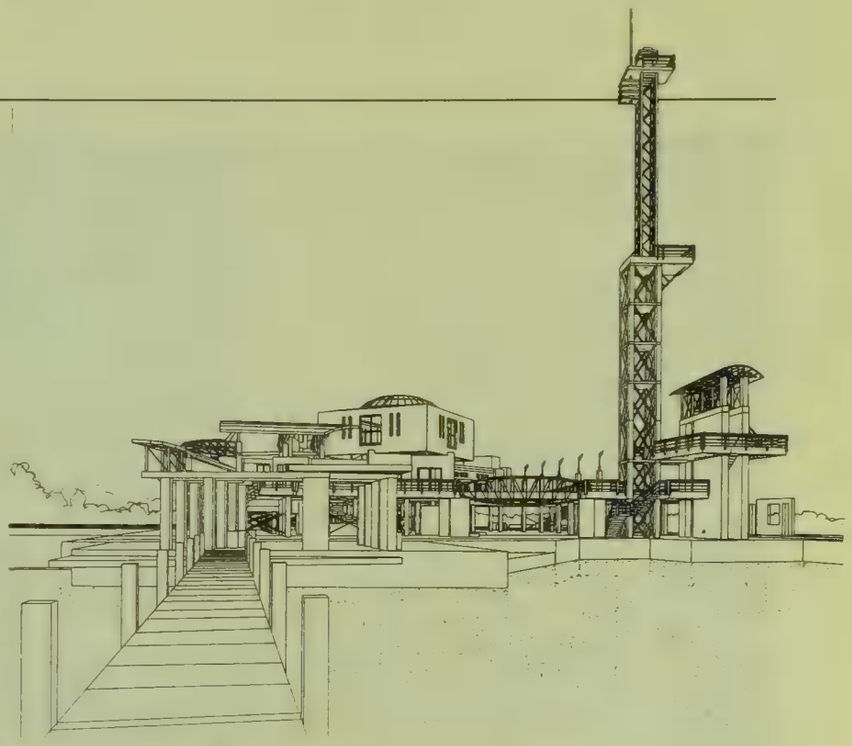
The New York City-based designer calls this a "work in progress," in which the computer model and imaging have been refined steadily since it was assigned as a studio project in the fall of 1988 at Cornell University. It's called A Monument to, and Burial for a Plane Crash. The jurors were impressed by the detail and precision of the image, including the rendering of surface, light, and shadow. They were also intrigued by the graphic power of the "worms-eye" perspective image floating on its deep blue background.
Computer: IBM 320H RS6000
Software: Unix-based IBM Architecture and Engineering Series for drawing and rendering
Output: Iris plotter



'n its first Computer Delineation Awards, RECORD challenged 'eaders to "silence the skeptics" by showing their best electronic lesign presentations. The winners, herewith, and more.

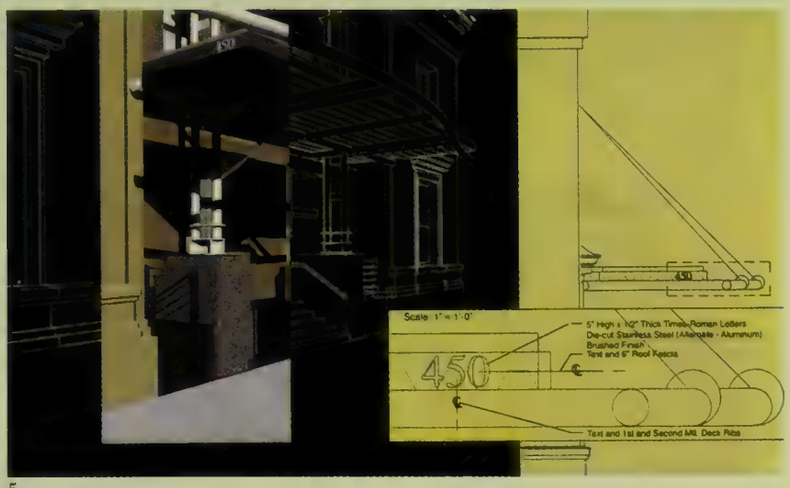






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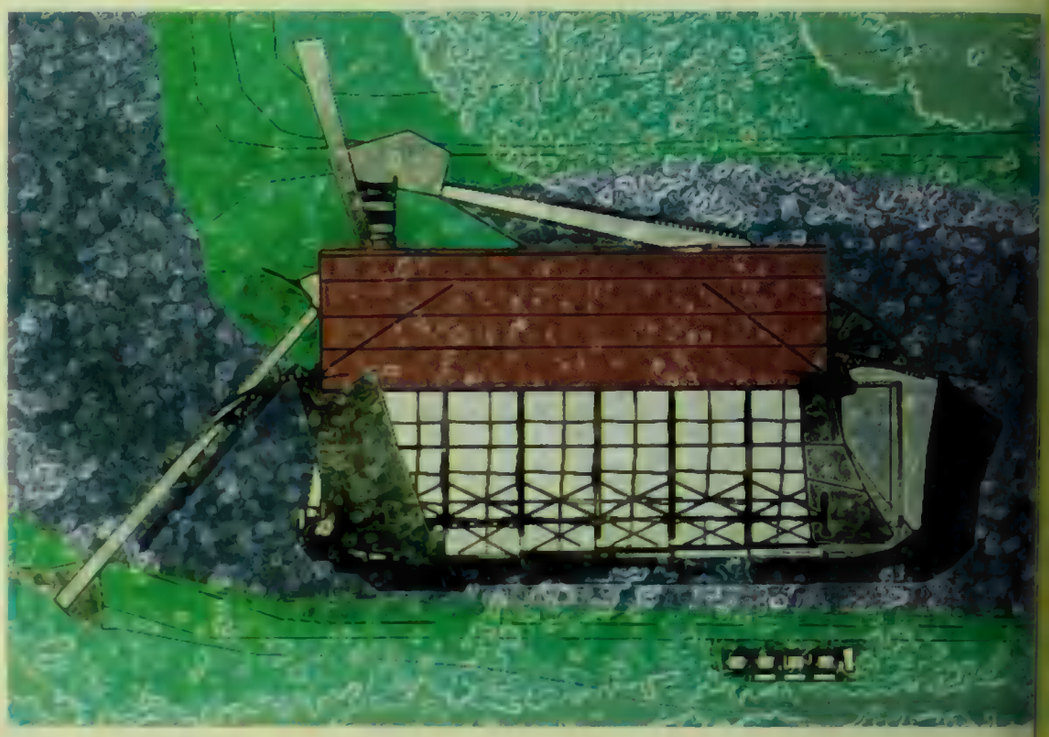
5



First Prize

An Olympic Natatorium by Drew F. Miller

A student at the Savannah (Ga.) College of Art and Design, Drew Miller won a complete Architrion architectural package from BAGH Technologies for an Olympic Natatorium that bridges a small lake. Miller not only created the selection of renderings shown, he submitted an animation that showed how the parts of the design go together. The jury approved of both the design and the presentation. Said juror Oles. "The designer is using the technology to *investigate* certain things." The software permitted numerous ways of evaluating the design, helping, said Paola Antonelli, "move it farther ahead." Miller did the design project for Professor Deirdre Hardy, and worked with Peter Christman and Jim Goodlett of the College.



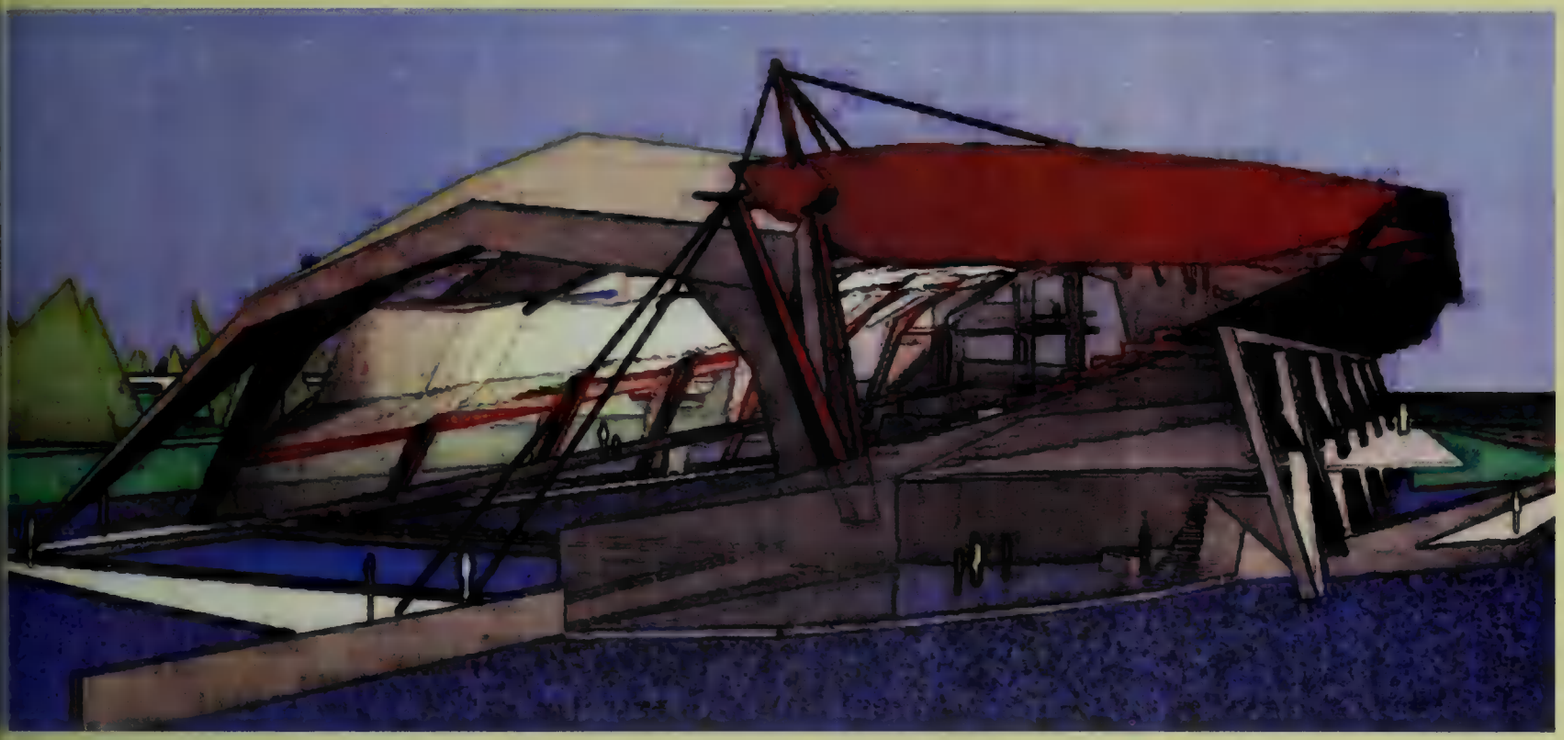


Computer: DOS-based 486-66mHz; YEM EVS 980 scanrate (digital to analog video conversion); Sony EVO 9650 Hi-8mm video

Software: DataCad (3D design); StereoCAD Realtime (virtual-reality interactive application); Autodesk 3D Studio (animation sequence program); Adobe Photoshop (color rendering)

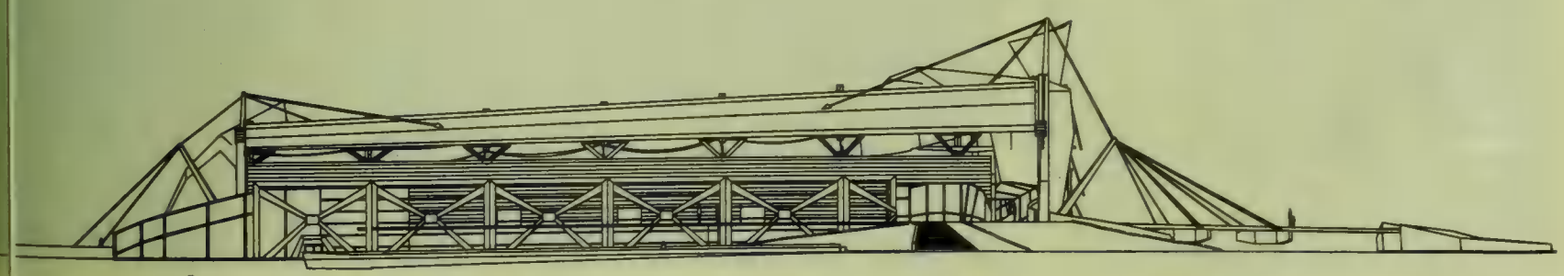
Output: Xerox [illegible] SSE color laser printer (one-step); Tektronix [illegible] (this

ne First Prize scheme impressed the jury because it used a variety drawing and rendering techniques to explore the implications of e design and explain it to others.









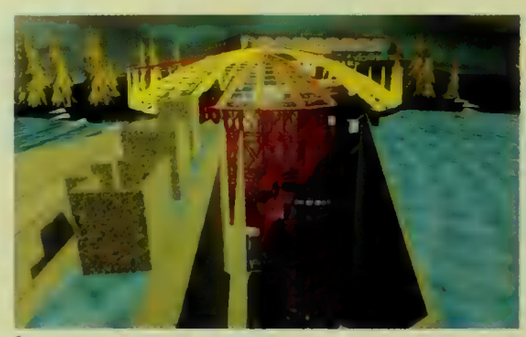
Second Prize

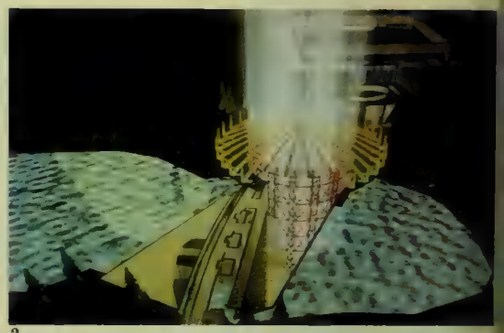
A Museum by Taig Youn Cho

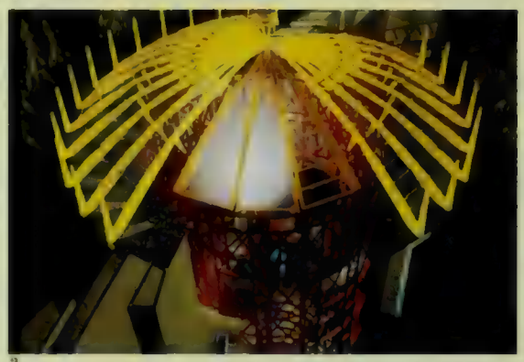
The second prize, Softdesk's Auto Architect for Windows, was awarded for this Geochronology Museum, an expansion of the George Page La Brea Tarpit Museum in Los Angeles. The designer described the project through perspective views (one example, opposite), which were amplified by an animated tour (images this page). The animation moves the viewer from the site (1) into the museum, which is in the form of a 120-ft-dia cylinder (2, 3). Visitors see fossils selectively revealed in the soil as they pass downward along the perimeter (4). Six small theaters are suspended near the base (5, 6).

The jury felt the computer was essential to this project's genuinely three-dimensional conception. The animation was the most sophisticated of those considered: theater seating and screens moved to various positions (the screens themselves played—among other "movies"—swimming dolphins, 7). "The mark of the artist hasn't been erased," commented Bausman. Cho, a UCLA architecture student, was assisted by Elizabeth Park of Sun CAD Service.

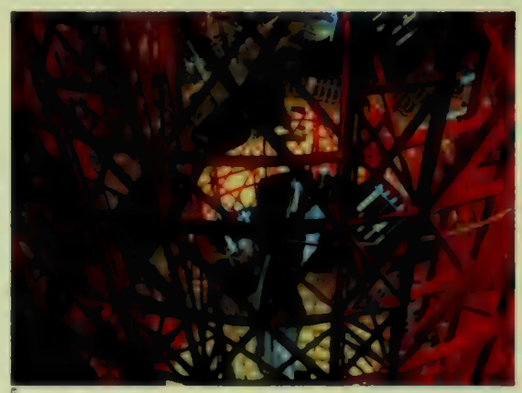
Hardware: IBM compatible 486-66mHz; TAGA 32+ card (NTSC converter); Panasonic AG 7750 (video recorder)
Software: Autodesk AutoCAD and AME (3D model builder); Autodesk 3D Studio (animation); Aldus PhotoStyler and Autodesk AutoAnimator (rendering)
Output: VHS tape and Hewlett-Packard 650C inkjet print ■

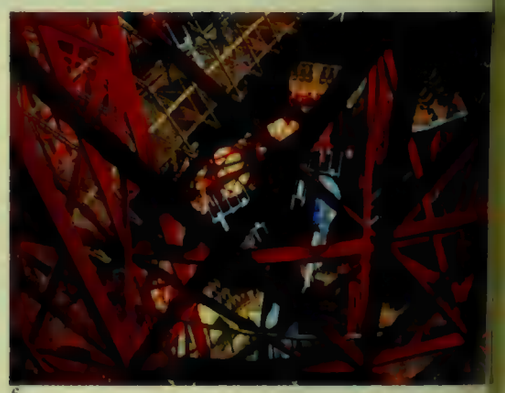

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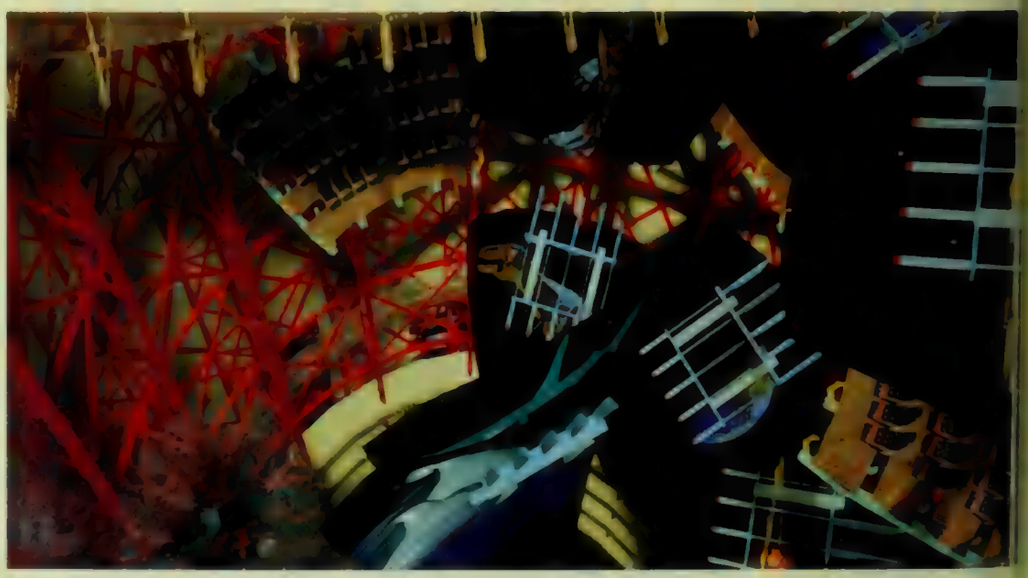

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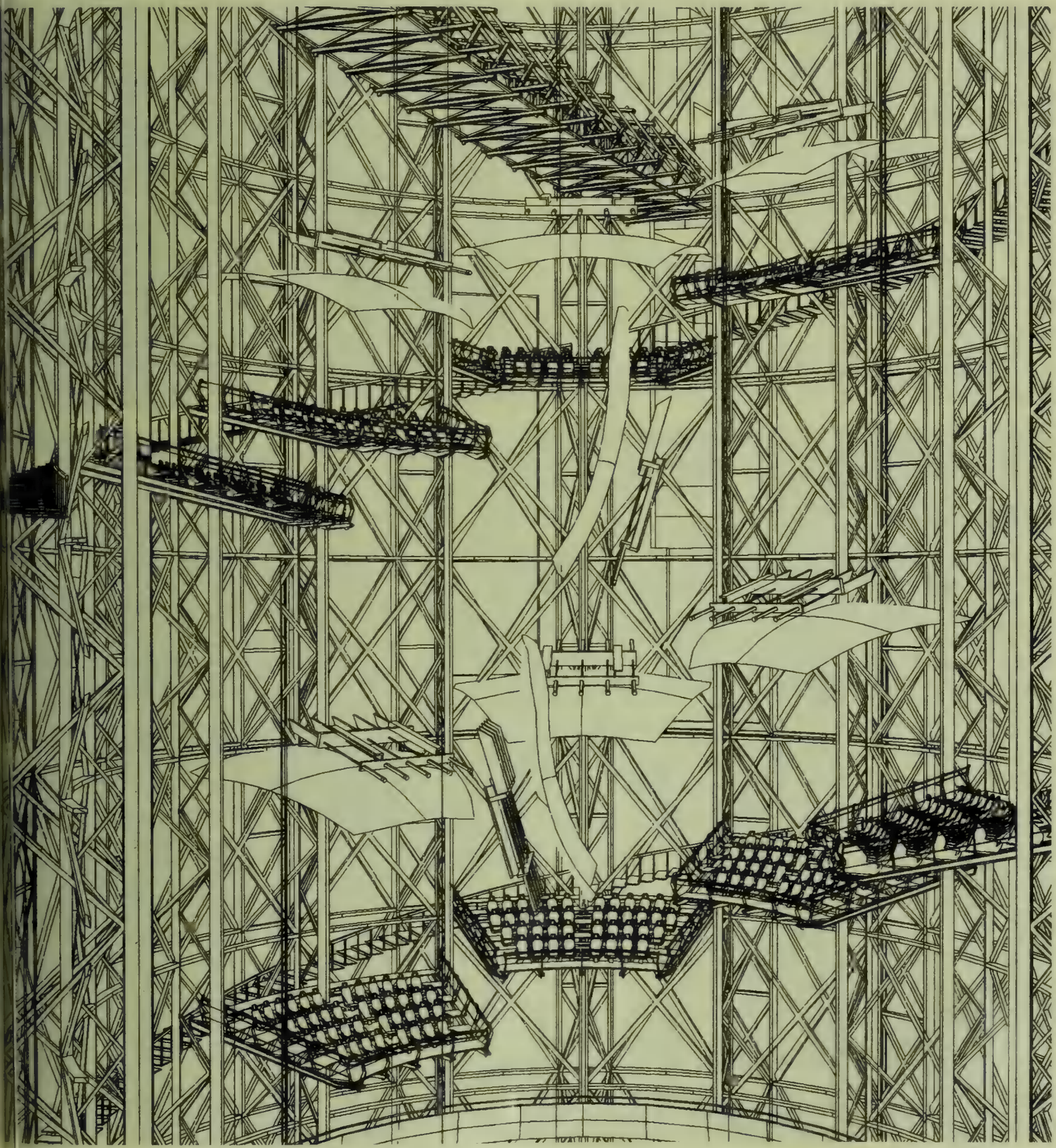

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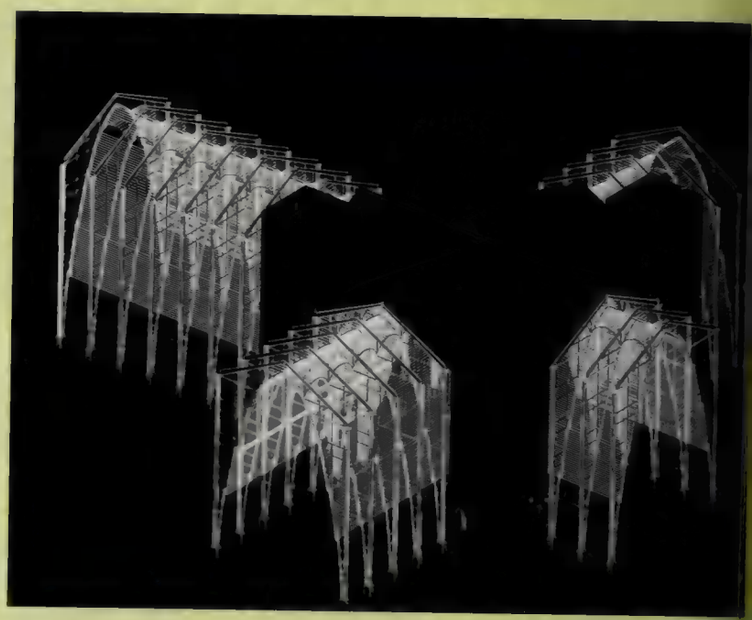
ırors awarded the Second Prize primarily on the strength of an vimated tour of the entrant's underground museum project. "here's a consistency of design and presentation medium," mmented juror Steve Oles.

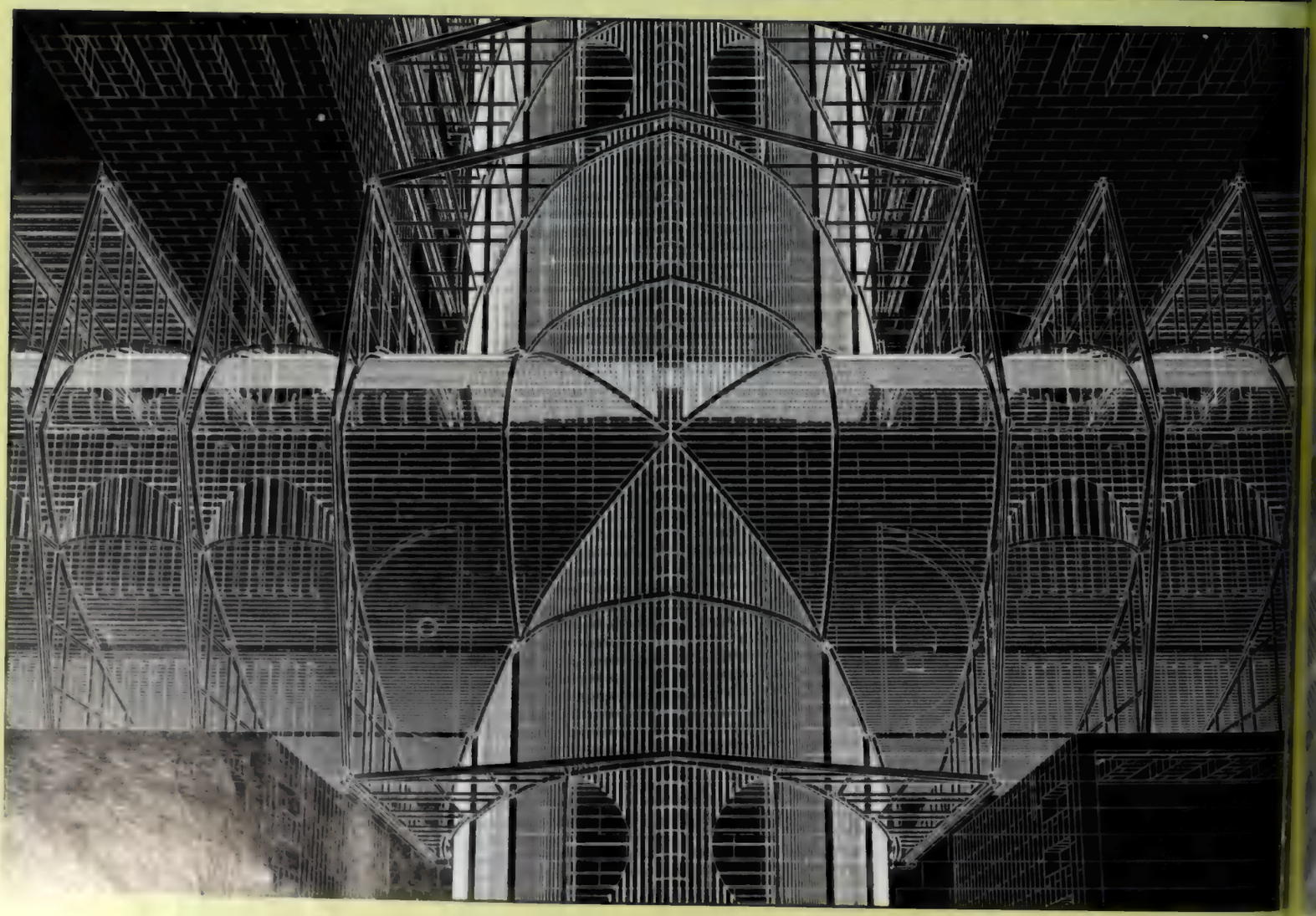


Third Prize

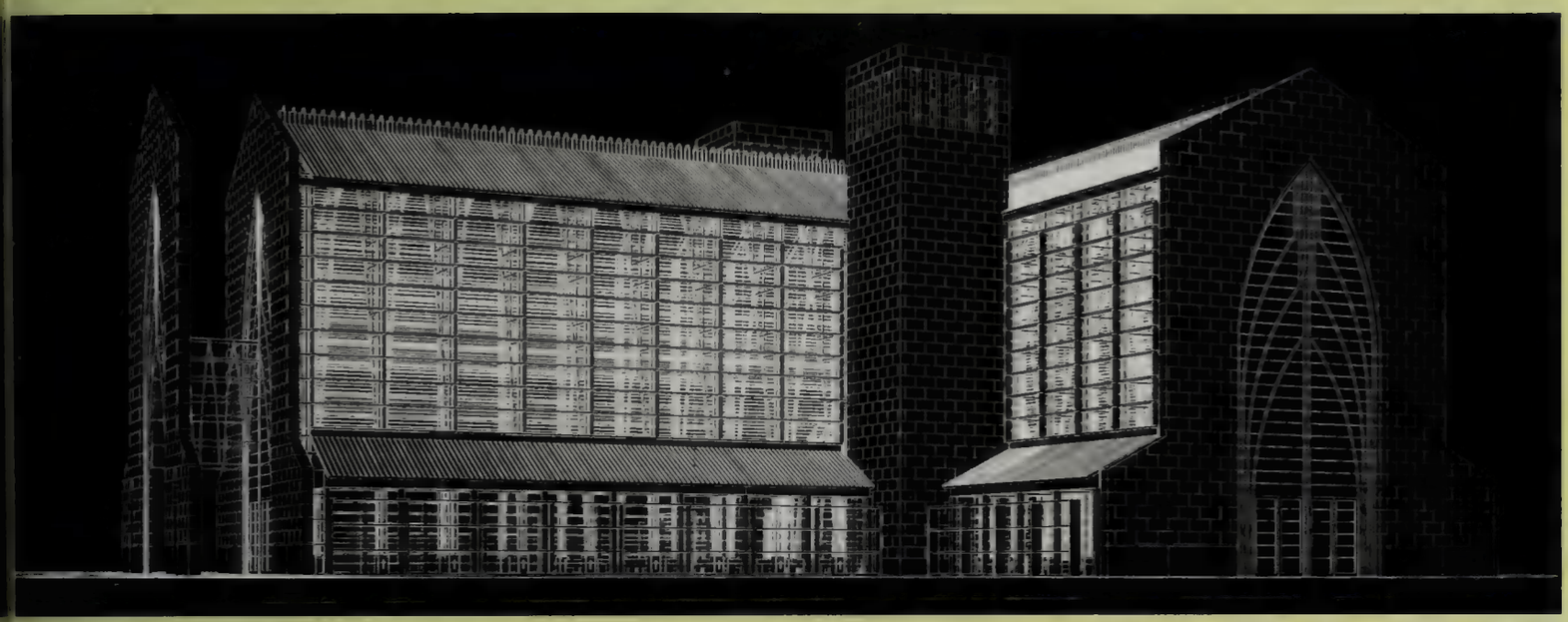
Epiphany Church by Spillis Candela & Partners

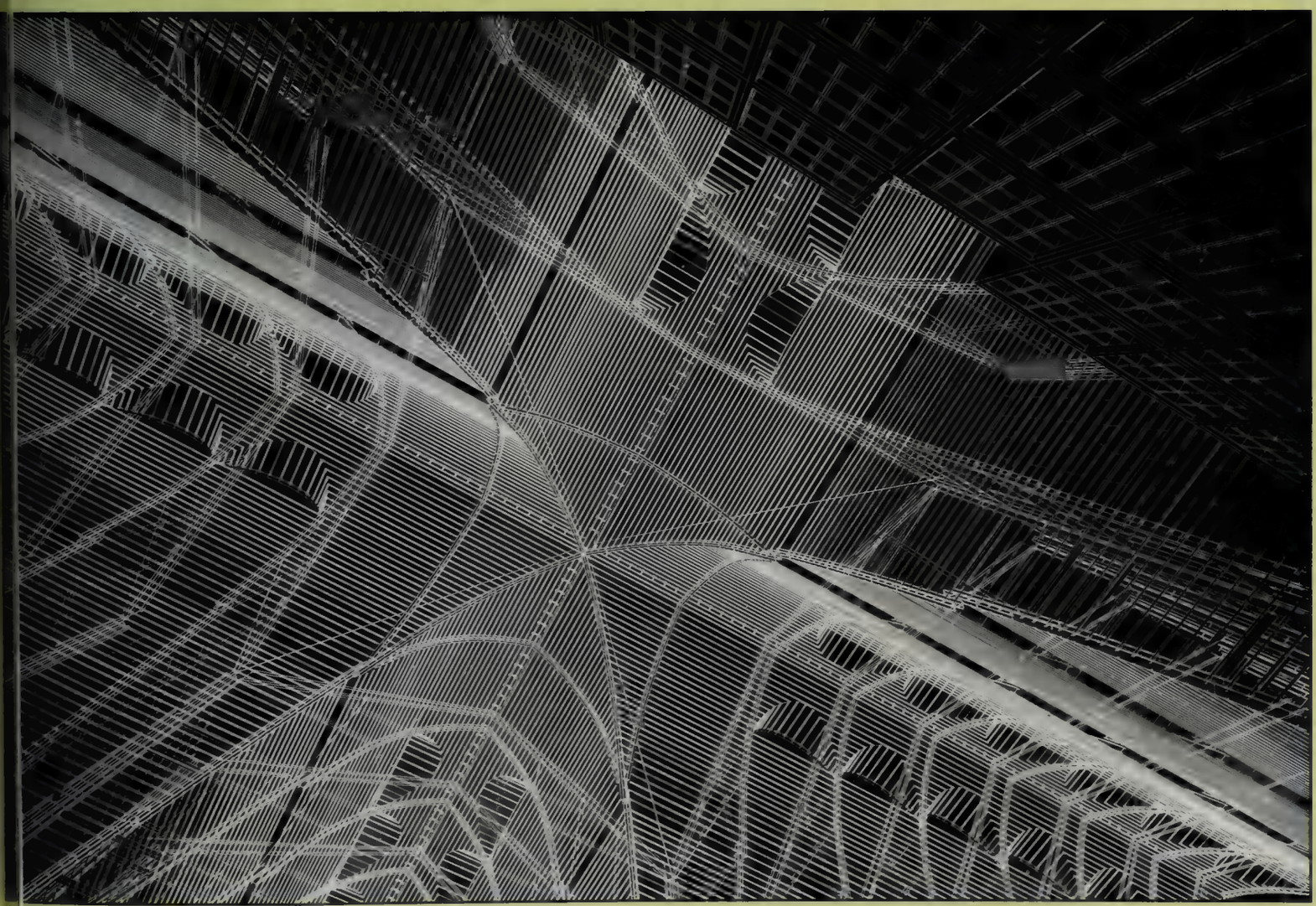
This diocesan church for 1,000 parishioners in Miami was delineated by Efraim Oliver, who will receive the Third Prize, an Advanced Architecture 3D CAD software package from Eagle Point. The church's steel arches, on which acoustically treated, light-filtering metal lattices are mounted, brace external columns. Stone-clad towers house mechanical equipment and brace the project against hurricane winds. The jury split as to whether the drawings explained or obscured the design's mass and transparency. "It may be an example of how the computer can mislead," said Paola Antonelli. Karen Bausman replied, "You get a higher reading through the lines and their weights. They mean something." Design team: Hilario Candela, Aramis Alvarez, J. Emilio Bonilla, Shahrizan Amir Hamzan, Maurice Candela, Meryati Johari, Carlos Vilato.
Computer: IBM compatible 486DXZ-66mHz
Software: Autodesk AutoCAD 12 AME2.1
Output: Hewlett-Packard Designjet 650C inkjet printer ■





oillis Candela designed this church to fit an existing campus.
oting that the delineator eschewed electronic pyrotechnics, the jury
lmired the sheer elegance and sureness of his eye.





Primavera Goes Graphical; Hayes Speeds Up

Over the years, as clients have become more cost-conscious, and as project-management software has become more common in architectural practice, there has been a continual tension. Precise and flexible management software requires more data to be entered and more scheduling to be carefully detailed.

The trick, for architects, is to input data the same way you'd input data in a CAD package– by pointing to where you want it on-screen, and then typing or clicking the mouse and dragging. Windows and the Macintosh make this easier. Microsoft has already exploited the Windows interface [ARCHITECTURAL RECORD, July 1993, page 39] for project management. Now Primavera, well-known for its ability to handle truly huge projects at an awesome level of detail—has followed suit.
Steven S. Ross

Primavera P3 for Windows

Vendor: Primavera Systems, Inc., Two Bala Plaza, Bala Cynwyd, Pa 19004, 610/667-8600, fax 610/667-7894.
Equipment required: IBM PC or compatible with at least 80486 CPU or equivalent, 8 MB of random-access memory (we recommend 16MB), 30 MB of disk space plus room for project files, DOS 5.0 or later, mouse, Windows 3.1 or later, or Windows for Workgroups. Output to pen plotters is worth the wait; the color and layout are gorgeous.
Price: Single user license $4,000; three-user LAN installation $8,000; eight-user $15,000. Various discounts available for bulk single users and larger networks. Price includes one year phone support (open except Sundays). Users can also access Primavera's electronic bulletin board and CompuServe forum.

This is the first version of P3 that works with Windows. It offers almost all of the functionality of P3/Finest Hour 5.1 for DOS in an even more intuitive and flexible interface. It should also be easier to keep in a multi-user environment; files can be shared over even a simple network using Windows for Workgroups on the terminals and Windows NT on the server. It is also compatible with Novell NetWare 3.11 or later, NetWare Lite 1.1 or LANtastic, Banyan Vines, and many other network packages. (We tested it on NetWare 3.11 and Windows NT).

Projects can be huge, and you can open many projects at once (up to four if SHARE is set at the default P3 supplies upon installation).

When you first open a project, you get a bar chart (Gantt) on the right and an activities list on the left. Each is in a separate window; the vertical scrolling of the two windows is synchronized but the horizontal scroll controls are separate so you can view different sections of data too wide to fit into the display all at once.

Windows allows flexible on-screen editing of the display's appearance; time periods covered, order of the activities, schedules represented by the bar lengths, and so forth. You can also use the mouse to "point" to activities you want linked, or to links you want modified or removed.

In the activities window you can add columns for new data fields; edit existing data, and so forth. You can sort the activities on any field to group them. For WBS (work breakdown structure), you can have up to 20 levels.

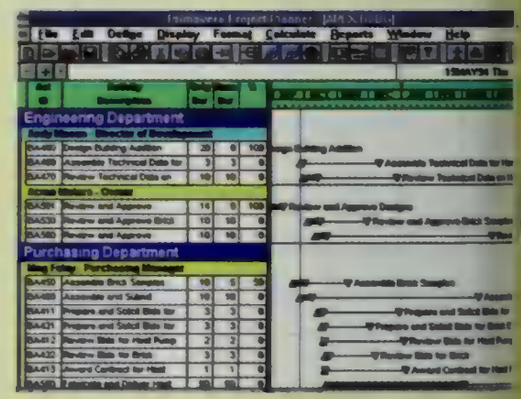
Once the bar chart is done, you can use it as a base for resource use or cost-over-time charts.

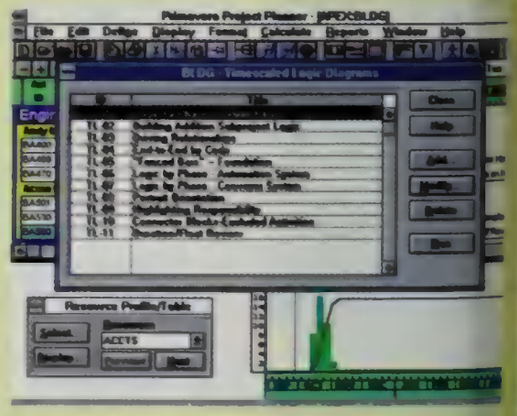
Linked activities can also be displayed in the bar-chart format (timescale linking). Logic diagrams and other standard project-management tools are available within P3 as well.

P3 comes with several interesting add-ons. There's a simple drawing package and a text editor that allow you to add extra elements to any display. There's also a separate report writer (Borland's ReportSmith) that allows sophisticated users to create automatic extracts of P3 data and insert them into other programs. P3 supports Microsoft's ODBC standard for exchanging data with many database formats (Paradox, dBase, comma-separated variables, and so forth).

You could, for instance, come up with a contractor-communications database, and even handle project billing within the framework of ReportSmith. We don't recommend this, because the link between ReportSmith and your latest data entries in P3 itself are not foolproof, but we recognize that many offices use project planners for billing– and that ReportSmith, while not perfect for the task, is the best we've seen yet.

Should DOS users upgrade to Windows? Yes, if they want more flexible output, and yes if they want better links to other software. (P3 for Windows supports OLE and the Windows clipboard.) Yes, too, if the office plans to use simple networking based on Windows NT and Windows for Workgroups. There is a speed issue, however. The Windows version runs a tad slower. But the lag does not get much worse with huge files, and resource-leveling is faster in the Windows version. And working speed (for accomplishing a series of commands necessary to update a project's progress or modify its structure), rather than raw "stopwatch speed" for specific tasks, seems better with the Windows version.





Top: Bar chart and associated activities' report on screen . Above: Choosing the logic to display in timescaled logic diagram; note resource-use plot in lower right corner.

The Windows version will run in 8 MB of RAM, but we found performance much improved with more memory; another 8 MB costs about $300 these days. Buy it.

The two P3 versions (Windows and DOS) can coexist in an office because files are identical, with minor exceptions described below. But moving back and forth between the two versions may be awkward for a given employee, because some data presentations are different. When you draw a graph showing resource use over a project, for instance, the DOS version cumulates the use period-by-period. In Windows, you enter the use per period (not the cumulative to-date use.)

Manuals: Lots of features, lots of instructions. Three large paperbacks (reference, ReportSmith, project planning text), quick-start guide, tutorials, videotape. First-rate, but don't try to swallow it in a short time. The on-line help is great if you have some basic grounding in project management.

Ease-of-use: Terrific, as project managers go. Lots of on-screen, in-diagram entry. This version shares all files almost seamlessly with P3 and Finest Hour for DOS, Versions 5.0 and 5.1. The file structure is identical. PENGUIN networks created with 5.1 can come into P3 for Windows, but they can't go back.

This program does require that the DOS SHARE program (for file sharing and locking in DOS versions 5.0 and higher) be in place, even for single-user installations. The installation program modifies AUTOEXEC.BAT to invoke SHARE. But this will cost you about 70K of normal DOS memory–enough to keep memory hogs like WordPerfect for DOS from loading. You may want to write a batch file to invoke SHARE only when you plan to run P3.

Error-trapping: Good. There's a lot of "smarts" built into the project logic. The underlying database is Btrieve, a stable performer. It is possible to run ReportSmith without updating the data dictionary, however. If you do, the resulting report will not be based on the latest data. (Updating data dictionaries can take lots of time for large projects, so users often leave this task for the end of a session.) *S.S.R.*
Circle **300**

Hayes Optima 288 V.FC

Vendor: Hayes Microcomputer Products, 5835 Peachtree Corners East, Norcross, Ga 30092-3405, 404/441-1617.
Price:
$579 for modem, $99 for ESP card.
Equipment: External modem for DOS or Macintosh with raw transmission rate of 28,800 bits per second. Use at this speed on a DOS computer requires special Hayes ESP serial port (available for standard bus or microchannel). Older Macintoshes can't handle the speed, either. We had no trouble with Centris/Quadra 610, but could not achieve maximum speed on an SE. It comes with Windows LE and Windows fax software.

Every once in a while, an advance in computer equipment takes such a large leap that it makes us reconsider a way of doing things. Using a computer modem to transmit large plot files and other graphics over phone lines to a service bureau has not been too popular, for instance, because the transmissions can take so long. But the alternative—moving disks around—is cumbersome and expensive.

The emerging class of modems runs at double or triple the raw speed of earlier units—28,800 bits per second—and offers on-the-fly data compression as well. Hayes, first out of the box late last year with its Optima 288, claims up to an 8-fold compression ratio (230,400 bits per second). That's certainly possible with highly compressible, repetitive files such as simple raster images: TIF or, better yet, PCX images of computer command screens or CAD views. Non-modem compression software such as PKZIP can reduce simple PCX images to as little as 5 percent of original size.

The price on the street—about $500—would pay for about 30 messenger trips and disks.

Earlier in-modem compression schemes have over-promised, because they often work only when identical modems are used to send and receive. At 28,800 bps, however, most vendors will apparently implement an emerging international standard, V.34. That should allow all modems of this speed to "talk" to one another. Hayes promises a cheap (under $100) upgrade of its Optima 288 V.FC when V.34 is finalized. In the meantime, Hayes says its Optima will recognize compression up to 8-fold on any modem implementing the V.42 *bis* standard.

How will such modems perform on typical plot files? We generated two big ones and transmitted them to a service bureau to see. We did not have time to test the Optima with other vendors' products.

A complex 2.3MB HPGL/2 plot file was transmitted in three minutes, 21 seconds. Uncompressed, it would have taken more than three times longer (654 seconds, or almost 11 minutes).

A more redundant HPGL plot file (with lots of repetitive hatch patterns) of 3.7 MB would have taken 1,050 seconds (almost 18 minutes) but actually transmitted in just under four minutes.

At the typical 9,600 bps, uncompressed, the first file would have taken a half-hour, and the second an hour. Nevertheless, the transmission speeds of the 288 correspond to about 94,000 and 127,000 bps, respectively—incredible, but well shy of the claimed 230,400 bps maximum.

All this comes without having to compress files in a separate step before sending.

The Optima comes with good software, but Hayes Smartcom for Windows (a $49 upgrade for Optima owners) and Smartcom II for the Macintosh ($49 to $149 with various upgrade deals) are better. ■
Circle **301**

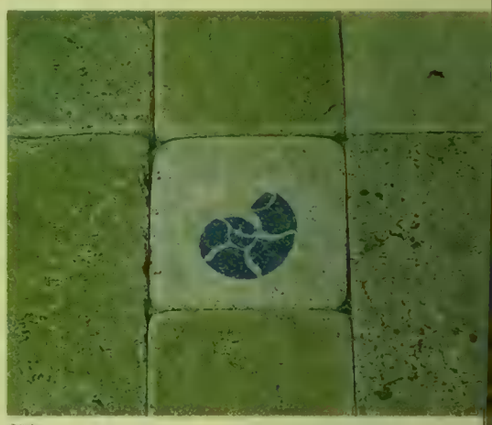
Tile and Stone Mosaics



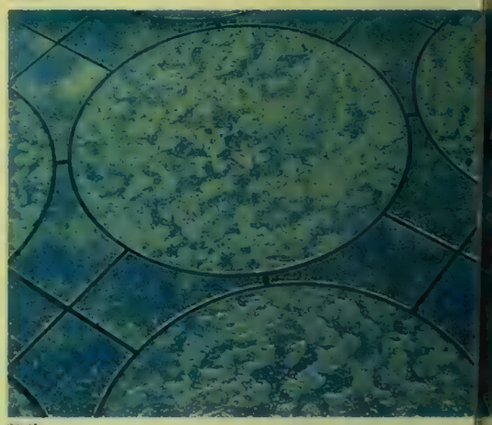
302



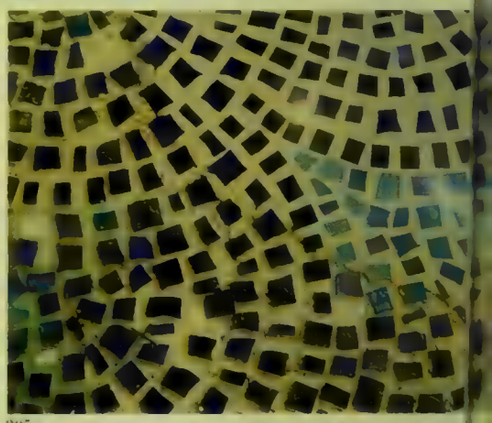
303



304a



304b



305a



305b

302. Mathematically precise
As unique as a snowflake (no 10-tile section is identical to any other) water-jet cutters translated physicist Roger Penrose's aperiodic motif into porcelain tile for Carleton College, Northfield, Minn. Two different kite-and-dart shapes were cut from four colors of 8-in. Caesar/Atlantis II tile. Installers set pieces individually, from the center out, following a color-coded working drawing by architects Cambridge Seven Associates, Inc. Buchtal Corp., USA, Roswell, Ga.

303. Tile graphics deter graffiti
The Blurock Partnership, architects of a science building at a vandal-prone Long Beach, Calif., high school, put easy-to-clean porcelain tile on exterior classroom walls. Artist Insalaco-Rogers, ASID, designed seven colorful murals, each 7- by 24-ft, depicting scientific subjects (astronomy is shown), in a successful effort to pre-empt other attempts at decoration. The tile manufacturer translated sketches into CAD cartoons scaled to one-inch mosaic tiles, and supplied the graphic premounted in 12- and 24-in. sheets. Dal-Tile, Dallas.

304. Novel Italians
Introduced at last fall's Bologna tile show: Cotto Veneto's stone squares with inlaid design of shells and fossil animals (304a), and Planetti, circular tiles set in special, double-curved inserts, made by La Fabbrica di Faenza. Both available in the U.S. Italian Tile Center, New York City.

305. Ancient art, modern materials
Bisazza, of Vicenza, Italy, makes Byzantine-style glass mosaic in several forms:

Vector-based CAD software and laser-guided water-jet cutters bring new precision and lower costs for mosaic walls and floors—one of the most ancient architectural embellishments.



306a



306b



307a



307b



308

quare-edged Vetricolor tiles, glass-and-
ietal Gemme, and a new clear-glass chip in
arious size gradations that reflects light
rismatically. These pieces can be cast into a
errazzo for countertops (305a). A traditional
malti mosaic for a new Hawaiian resort
305b) incorporates hand-broken glass pieces
et in an asphaltic base to capture the
uances of a watercolor by artist Yvonne
heng. Renato Bisazza, Inc., Miami.

06. State of the art

he most advanced water-jet technologies
re demonstrated in these two large pro-
cts: a spectacular map of the world
terpreted in dozens of different marbles at
ie as-yet-unopened Denver airport (306a),
l a luxurious stone lobby floor (306b), a
eries of interlocked medallions ranging up
120 ft in diameter. Costs for cutting stone with a very-high-pressure abrasive slurry waterjet device have come down while the sophistication of its computerized-control technology has increased. Creative Edge Corporation, Fairfield, Iowa.

307. Vector-based mosaics

Another CAD-driven tile-cutting and layout method, Lance McKee's secret is his proprietary software. Refined since its development, MosaiCAD can guide a waterjet to repetitively cut tile in some truly fantastic shapes, including lacy perforations and tiles within tiles (307a). Each tile in a design may be unique. Foot-square components of a large mosaic are supplied on a wire-mesh backing for start-at-the-upper-left-corner installation. Section edges are irregular and fit together like a jigsaw puzzle, making the "seams" invisible (307b). Mosaica, Worcester, Mass.

308. Traditional artistry

At Franz Mayer studios, both in Munich, Germany, and Fairfield, N.J., human artisans, not computers, do the work of translating an artist's or architect's concept into mosaic. Working with a stockpile of literally tons of glass and stone that offer thousands of subtle color variations, craftsmen in the 140-year-old firm execute commissions in large and small scale. A well-known installation in Munich's Odeonplatz subway station, Karl Knappe's huge mural of rough and smooth marbles, semi-precious stone, and gold and silver smalti measures 10 by 55 feet (detail above). Franz Mayer of Munich, Inc., Fairfield, N.J.

Tile and setting materials are featured in this month's Product Literature section.



309. Abstract wallcovering
Another entry in the 'inspired by Monet's home and garden in Giverny' category, a new Viertex pattern interprets the artist's colorations in a jacquard-textured, abstract-floral print. The contract-vinyl wallcovering is rated Class A, Type II, and comes in 22 standard colorways and custom colorations. Forbo Industries, Hazleton, Pa.



310. Discrete spots
Described as a track-lighting fixture without the track, individual Lightpoint fittings serve as a low-voltage electrical supply channel for different relatively unobtrusive quartz-halogen lamp heads (Cornetto is shown). The monopoint spots rotate through 360 degrees, and can be adjusted for precise beam control. Lucifer Lighting Co., San Antonio, Texas.



311. Cobblestone laminates
This Italian-made surface line has added four cobblestone patterns in soft, multi-toned gray, tan, blue, and rose to the Finti series of stone-look designs. The entire high-pressure Laminati line includes natural motifs as well as dozens of Memphis-inspired designs. Chain-mounted samples available. Abet, Inc., Teterboro, N.J.



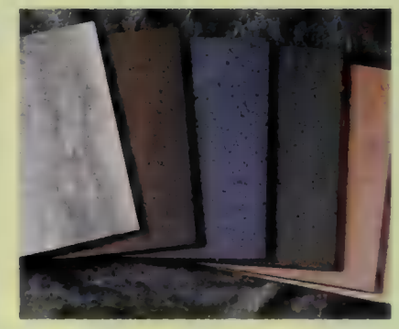
312. Composite-wood siding
Appropriate for both new construction and re-siding, Colorlok lap siding comes in 11 colors, now including a Prairie Beige developed to be compatible with today's most popular residential masonry and brick colors. Panels feature a self-aligning spline said to insure level installation; wood-grain texture is available in all siding colors. Masonite, Chicago.



313. Chemical-resistant surface
Chemsurf laminates are now offered in two new versions: a formable type, for counters or wall treatments which demand no exposed seams, and a fire-retardant configuration (over fire-rated particleboard) intended for applications requiring a Class 1A rating. Tested for extreme chemical resistance, laminates come in 12 colors and eight patterns. Wilsonart, Temple, Texas.



314. Wright inspired
Architect Stuart Cohen has designed a no-corner corner window as a standard wood-framed unit, available primed or aluminum-clad in a custom teal finish. The mitred insulating glass needs no supporting mullion, recreating the effect Wright achieved in the corner windows of his home at Spring Green, Wisc., without compromising weathertightness or energy efficiency. Pella Corp., Pella, Iowa.



315. Stone-porcelain pavers
Developed for the special stain-resistant requirements of healthcare, retail, and institutional environments, Crystal Flame pavers feature large, multicolor graining on a background of striated color that varies from tile to tile. Twelve-inch squares come in polished or pebble-finish options, in the colors shown; borders and accent trim available. American Olean Tile Co., Lansdale, Pa.



316. Side/guest chairs
Seating guru Brian Cox combines a nostalgic ladderback with a slimmed-down upholstered platform in his Franc Chair, one of the designs in the "reasonably priced" Currency Collection. The Yen Chair (not shown) has an oriental flair to the shape of its back and arms. Bernhardt Furniture Co., Lenoir, N.C.



317. Historically correct
Architects Goody, Clancy specified handmade German glass almost identical to 18th- and 19th-century glazing for the outboard lights of new energy-efficient windows in Harvard's 1870 Weld Hall. The frames are a new line of true-divided-light wood windows that have the narrow-and-deep muntins of the original fenestration. Architectural Components, Inc., Montague, Mass.



318. Seismic dampers
Compact linear-hydraulic dampers effectively dissipate energy from seismic events. Units are said to be maintenance-free, cost less, and to generate output in a form easy to model using existing structural codes. Devices come sized for most building or structural needs, from 1 to 2,000 kip. Passive dampers automatically recenter after shock. Taylor Devices, Inc., N. Tonawanda, N.Y.

Homann - Simple Elegance



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louis poulsen

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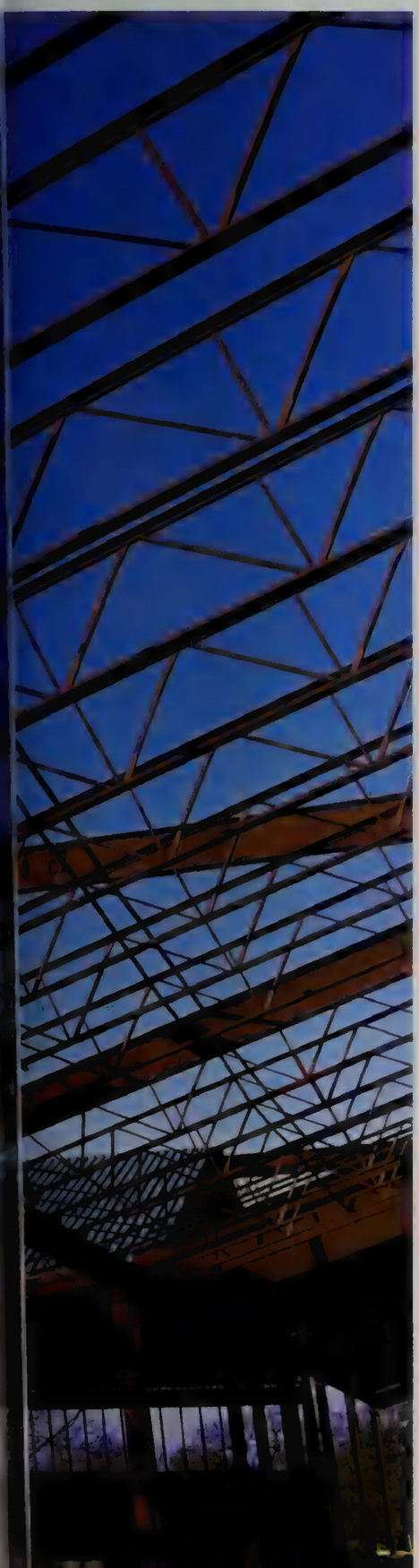
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Photography: Peter Leach, Denver, PA Artist: Toshio Sasaki Owner: New York Aquarium

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THE DESIGNERS PALETTE

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etters *Continued from page 29*

ıe person's time and energy for a period of year or so. Here, the considerations of supporting the person and partners and friends :e most important.

upport groups have been invaluable both om practical and emotional standpoints. Do ou have a support group, should be almost ur first question as an employer when an nployee tells of HIV+ status.

y lover's care, from an HMO that also paid r IV nursing and home hospice care, nded by our firm's insurance under a lomestic partner" arrangement, was first te–and incidentally, seems to be similar to e Clinton administration's health care prosals. Many medical conditions are being eated more at home, making the sort of commodation and flexibility discussed ove necessary for employees facing many fferent illnesses.

ugh Adams Russell, Principal
ıssell & Scott Architects
mbridge, Mass.

lluschi Remembered

irty years ago, my senior studio at the niversity of Florida took an architectural ır of Central Florida. The most memoble location was the home of Mr. and Mrs. uis Skidmore nestled in the middle of an ange grove. A gracious Mrs. Skidmore led through her home with obvious pride. I nember her story of their home design tory. "After many attempts of home signs by my husband's firm, I finally said, uis, why don't you just hire Pietro to sign the house?"(Skidmore founded M.)

is was my first, and most memorable, roduction to the works of [the late] Pietro lluschi [RECORD , April 1994, page 13]. I urned to college after this trip and began study the work of the man who designed architect's house.

n years ago my career path led me to pond to an advertisement to work for Belhi & Associates in Arlington, Virginia. I erly and aggressively pursued this opportity to gain close contact with my *icon.* referred to Pietro as "Maestro," which eed he was. From his studio in Portland, would send daily his design details for ing, brick coursing, railing details, etc. beautifully drafted and shaded with his sonal notes about the materials. How I I had kept the copies of his sketches.

Every two weeks Pietro would visit us in Arlington; he never failed to walk around and visit with each of us. He was genuinely interested in our design ideas, professional history, and opinions, and shared his philosophy liberally with us.

Jack Kelso, Kelso & Easter
Richmond, Va.

Afrocentric Architecture

While it may be true, as Mr. Majekodunmi states [RECORD, January 1994], that we "are no longer Africans" we are more then just Americans. In fact all Americans (even white people) derive part of their identity from another culture. As a result some Americans identify themselves as African-Americans.

All black architects recognize, from their school "daze", that knowing architectural history is considered very important to being an architect. But whose history are we taught in school? Society educates its Architects to create buildings which reflect the culture and values of that society which provided the education. While America is, in reality, a place of

Continued on page 134

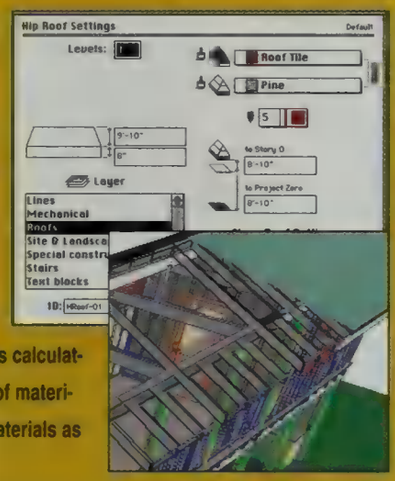
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Kelso Architects, Kailua, Hawaii

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TRISHA WILSON

ON COLOR & INNOVATION

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we can train our eyes to catch them—

even if they're just ever so briefly in our sights.

Once I saw the most magnificent color

on a lion running through the bush

with the morning light bouncing off his mane.

I used that color for the interior of a building that perhaps

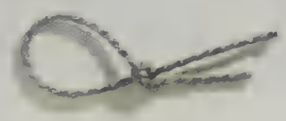
could not exist anywhere—except in our imaginations.

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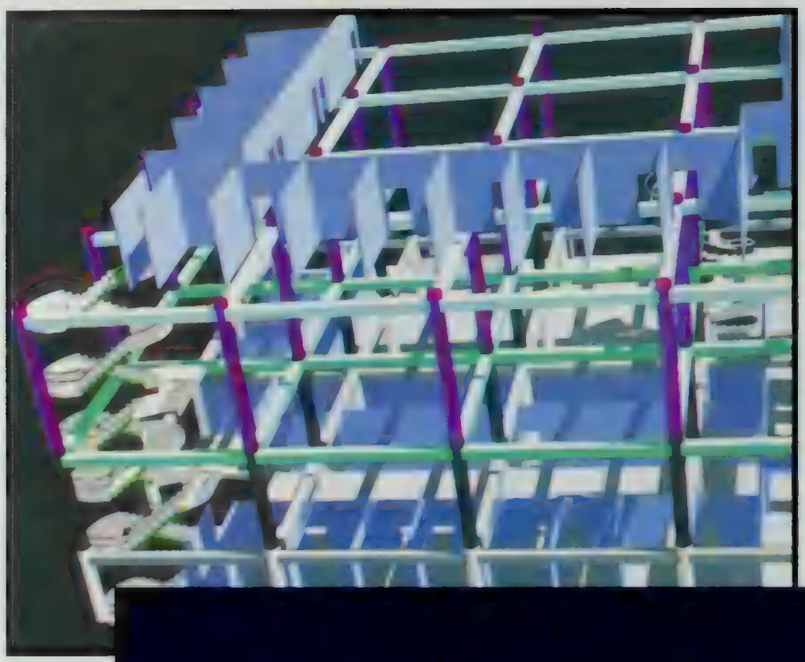
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— *David Bader,* president
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Combining MicroStation and DesignWorks, Curt Dilger, David Bader, and Steven Johns enjoy increased productivity at neubau imaging.



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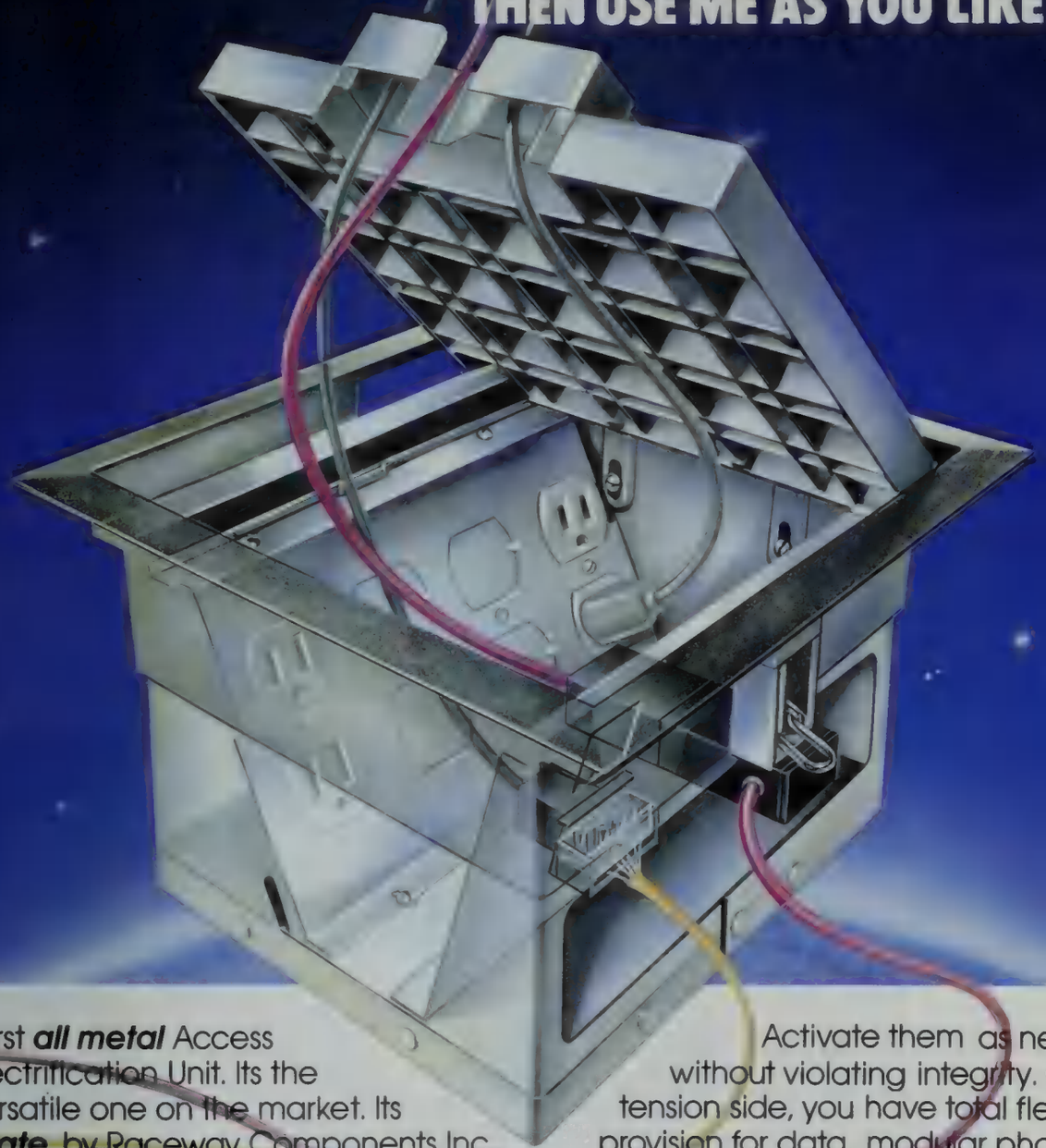
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* Prepared by James E. Grimes, A.I.A. (May 7, 1990). Excerpts from Metal Architecture 1991 [illegible] presented by American Iron & Steel Institute, Washington D.C.

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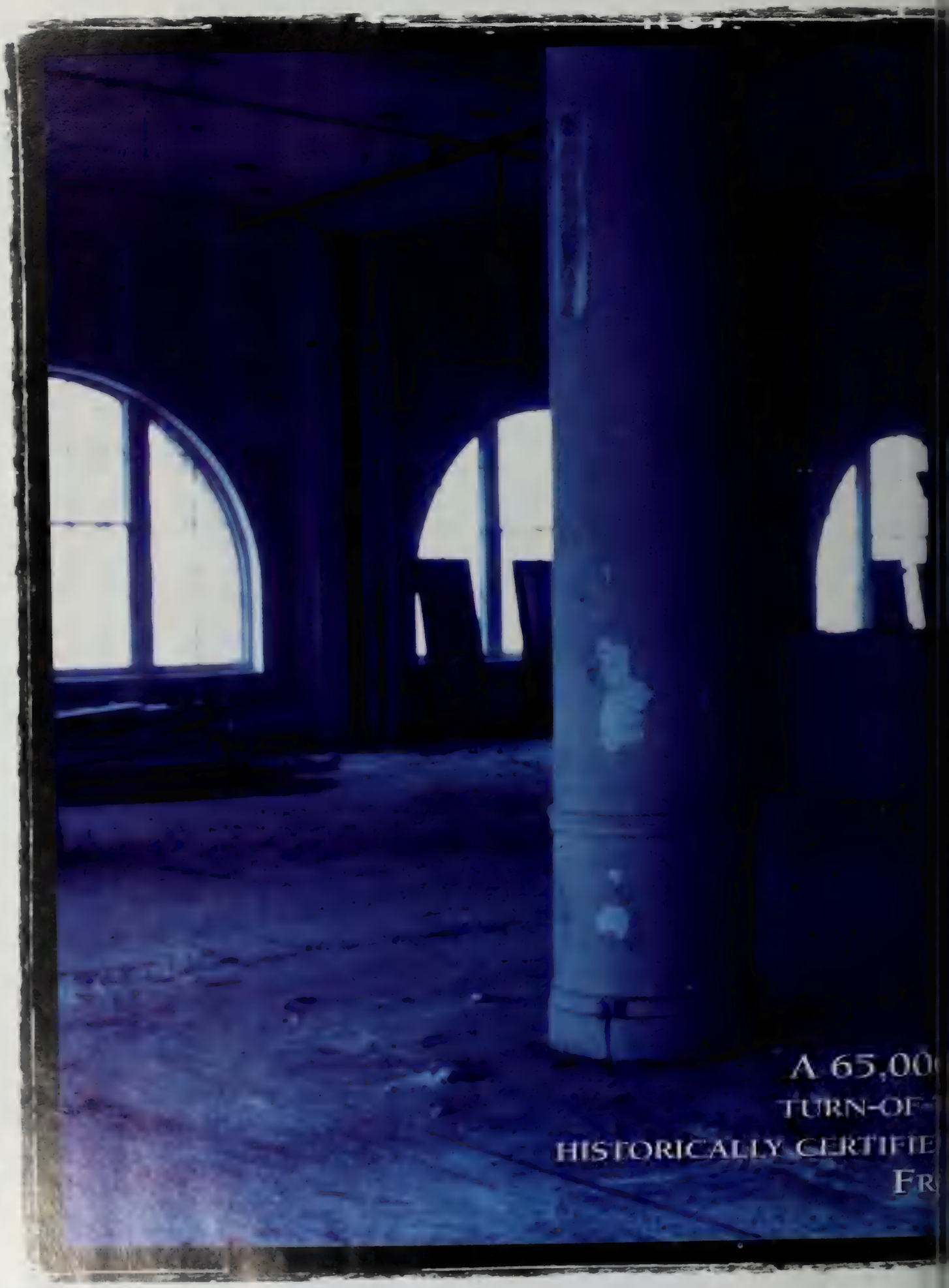
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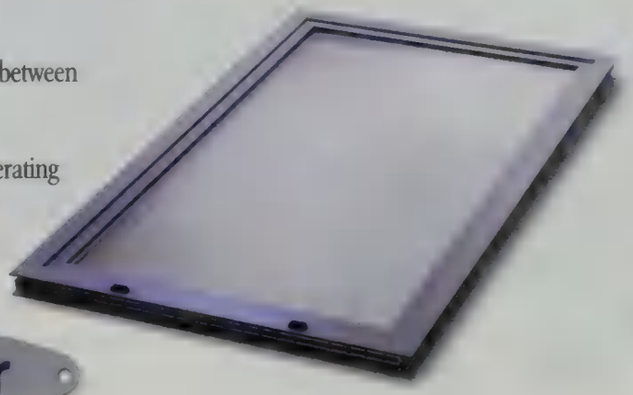
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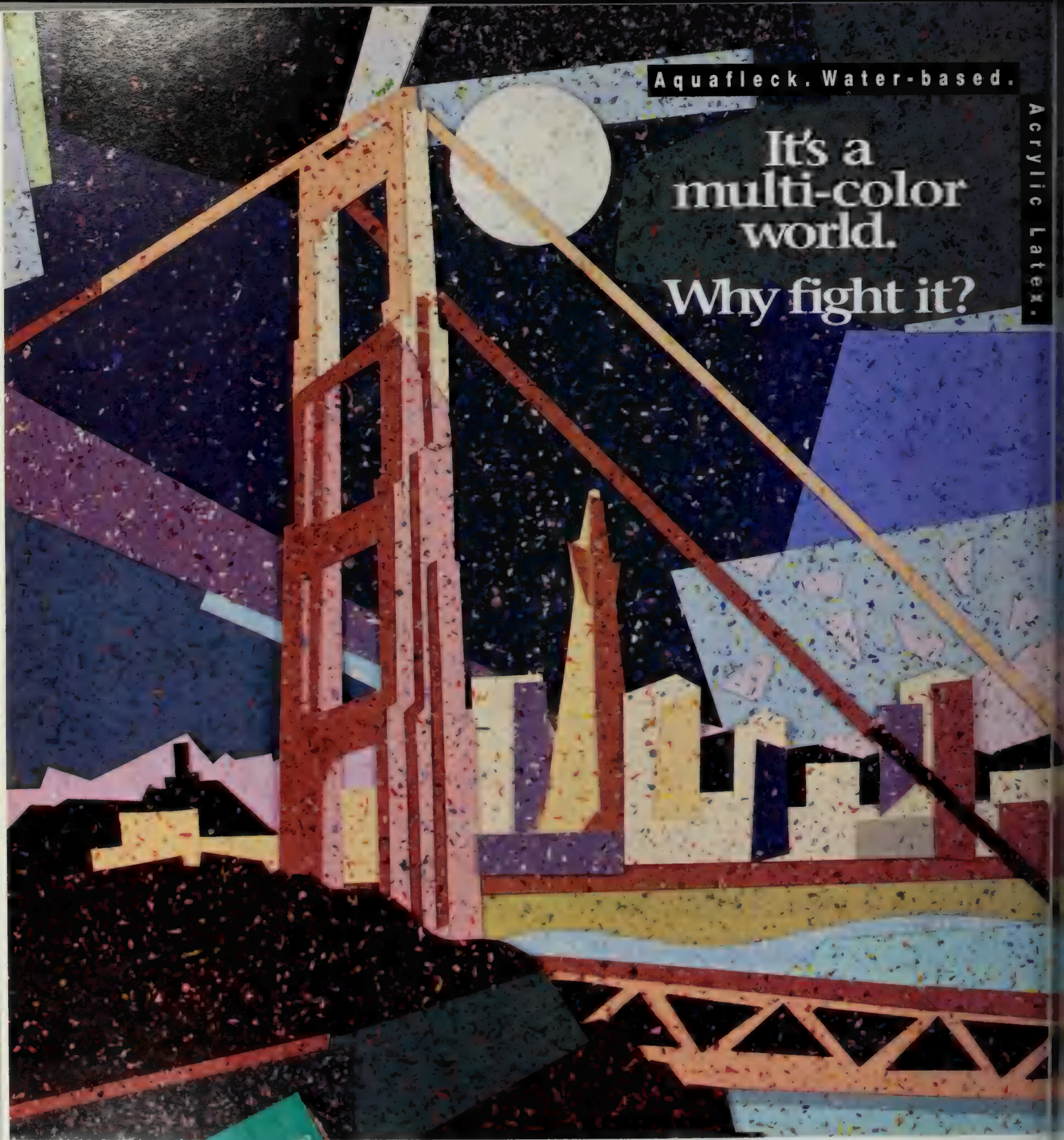


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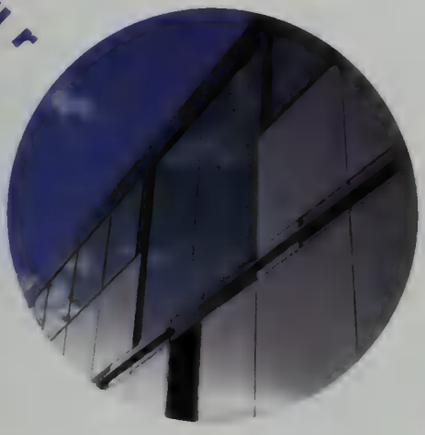
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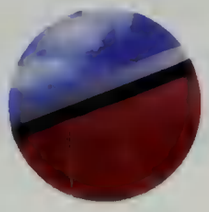
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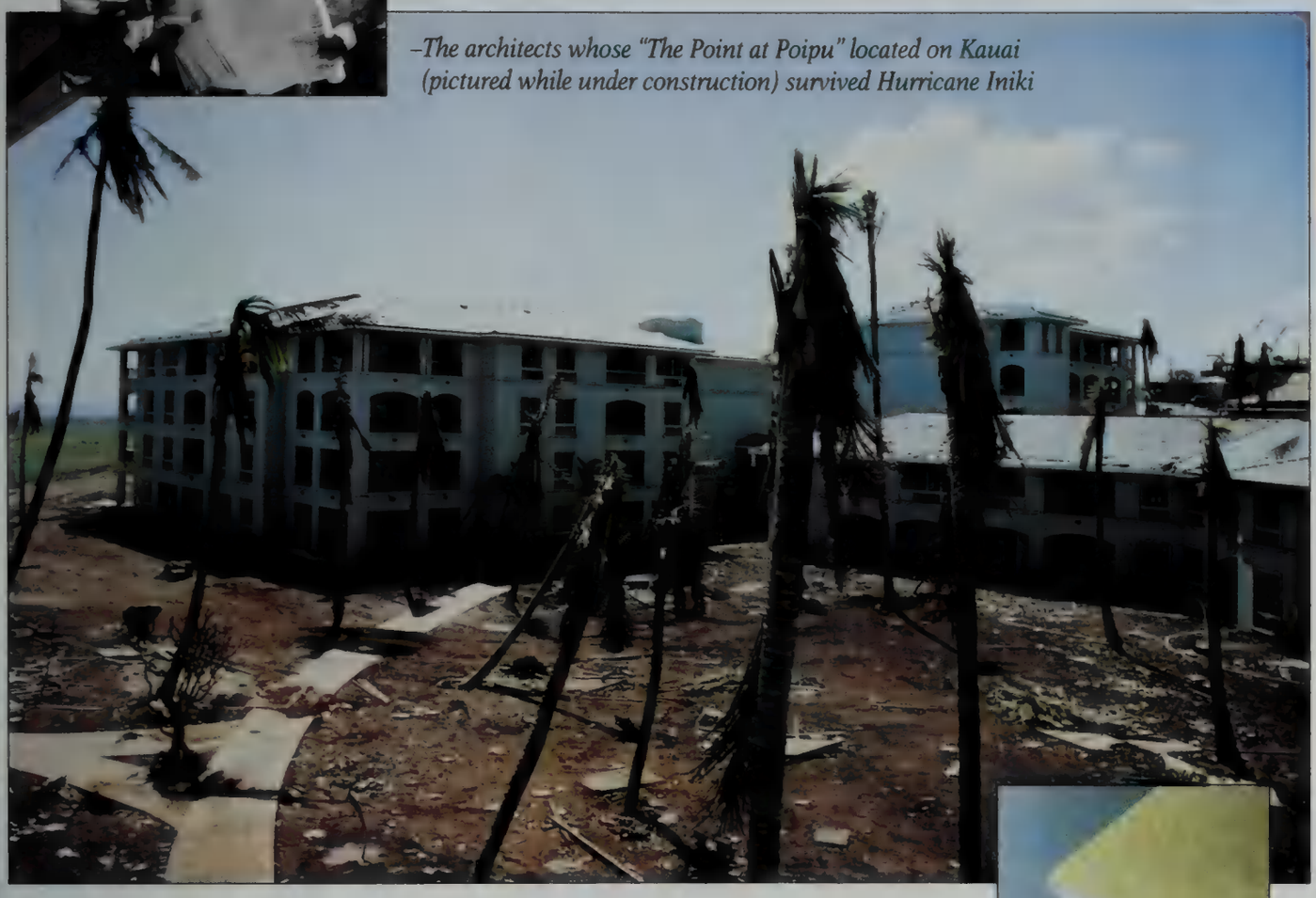
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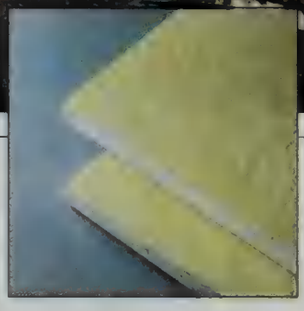
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"We chose G-P Dens-Glass® Gold to protect the project from moisture. We were not expecting a hurricane."



–The architects whose "The Point at Poipu" located on Kauai (pictured while under construction) survived Hurricane Iniki





Architect: Group 70 International, Inc. / General Contractor: Fletcher Pacific Construction Company

G-P: You figured you'd use Dens-Glass® Gold to keep moisture out of the condos, and it ends up ...

ARCH: *...helping the condos stand up to hurricane force winds as well. The combination of the synthetic plaster we used and the Dens-Glass Gold gave the condos more structural stability than regular gypsum board could have.*

G-P: You counted on Dens-Glass Gold for protection from sea spray, right?

ARCH: *Yeah, constant sea spray riding in on lovely breezes up to 42 knots. That was a key reason we specified Dens-Glass Gold – paper-face can't touch it for moisture protection.*

G-P: So when Iniki arrived, the condos survived the winds *and* the rain.

ARCH: *Frankly, we were astonished. You know, over 85% of the buildings on the island were damaged. No one would have expected Dens-Glass Gold to withstand that kind of storm. But it is made for high performance. Its construction is totally unique. Silicone and fiberglass, right?*

G-P: Silicone-treated core and embedded fiberglass mats front and back, with the gold-colored alkali-resistant coating.

ARCH: *And it's those fiberglass mats that make it more stable than paper-face.*

G-P: By the way, G-P backs Dens-Glass Gold with a six-month limited warranty against moisture deterioration when it's fully exposed to the weather. It's also warranted for 5 years against manufacturer defects.*

G-P: So, you're a pretty satisfied customer?

ARCH: *And you're a master of understatement.*

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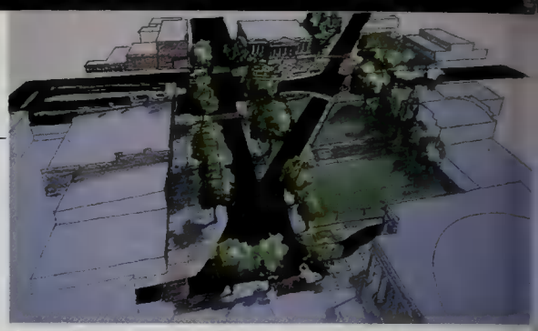
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Building Types Study 717/Infrastructure

Infrastructure is one of those words that suddenly appeared in everyday conversation, raised during the Clinton/Gore campaign as an issue of great importance on the national agenda. While this month's cover shows that what RECORD editor James Russell calls "the engineered viscera that undergirds our modern lives" can be fascinating, too often it defiles the community of which it is a part. The teams that designed the projects featured on the following pages did not accept the stultifying norm. A chiller plant at UCLA, a functional necessity, has been molded into a powerful sculptural presence (page 104). The final segment of coast-to-coast Interstate 70 highway through dramatic Colorado mountain terrain shows how sensitive design can win over opponents to a project (page 112). A waste-management plant in Phoenix makes community-involving art out of the necessity of recycling garbage (page 98). A new terminal at Chicago's O'Hare creates a welcoming new landmark (page 116), while London's terminus of the Channel Tunnel elegantly restates the train shed (page 90). To provide a glimpse into the possible future, Lisa Wormser and Hank Dittmar of the Surface Transportation Policy Project assess the Intermodal Surface Transportation Efficiency Act, pointing out how architects can work with engineers to improve infrastructure (page 86). *K.D.S.*

Manufacturers' Sources listed on page 143

Destinations



Civic Center, Macon, Georgia

Architects were once indispensable partners to civil engineers in "producing such memorable structures as San Francisco's Golden Gate, or the beautifully landscaped parkways around New York City," RECORD noted last year [June 1993]. But "today it's rare to find a prominent bridge or utility structure that departs even slightly from the ultra-standardized civil-engineering kit-of-parts." Now, because of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), design and technical professionals are once again teaming up to promote livelier and more sustainable communities through infrastructure investments.

ISTEA signals the official beginning of the post-Interstate era in the United States: it redefines the federal role in transportation planning, and gives local governments more power to decide for themselves how transportation investment should serve communities. ISTEA also mandates a new state planning process which is parallel to and incorporates regional plans. States are given more leeway to develop their own road-design standards, taking into account the historic and scenic integrity of roads. In addition, a much wider range of projects is eligible for federal transportation funds than ever before. These changes are resulting in new projects combining transportation improvements with community benefits.

Bridging traditional gaps

A new bridge will soon welcome airport travelers, pedestrians, and transit users into downtown Pittsburgh's Golden Triangle. Using federal, state, and local funds, the Wabash Bridge will serve "as a transportation link, but [also] as a major bridge design in a virtual museum of bridge designs spanning over a century," says Rob Pfaffman of Bohlin Cywinski Jackson, who headed a team of local architects in a 1993 charette to spark ideas for the bridge design. The new bridge will feature a dedicated transitway, walkways, and pedestrian access to the waterfront (drawing, page 89).

As if time and a river were not enough, the Wabash Bridge project also spans a professional gap opened up by the Interstate-building age—between designers who think about places and engineers who think about destinations. But the design of the Wabash Bridge is also typical of the obstacles to true partnership between architects and engineers: on paper, the bridge is sadly only one segment of a larger system being designed in a standardized way by Baker Engineering, the firm engaged by the Pennsylvania Department of Transportation and the Pittsburgh Port Authority. For example, says Pfaffman, nearby transit stations are not getting the needed attention to detail or to the specific needs of transit users and pedestrians. Pfaffman says the problem "is convincing the engineers that the charette is not the end but the beginning of the design process."

The firm of Doug Farr & Associates in Chicago has brought a whole [illegible] kit-of-parts." Using their newly developed [illegible] the firm brought neighborhood residents [illegible] aimed at revitalizing the Lake [illegible] was on the verge of shutdown by the Chicago Transit Authority (CTA). Community groups saw the El as the economic lifeline to a neighborhood where unemployment verges on 25% of all residents. In February 1993, the Neighborhood Capital Budget Group, a city-wide coalition of over 200 organizations, joined with the Center for Neighborhood Technology to save the aging rail line and the neighborhoods surrounding it.

Doug Farr & Associates donated time to designing and submitting to community review a series of six transit-based projects to densify housing and intensify employment in the West Garfield neighborhood in the El corridor. The community wanted to establish a 24 hour pedestrian center near the neighborhood's El station at Pulaski and Lake, and to increase safety and opportunities in neighborhoods along the El line. The "kit-of-parts" concept gaved residents hands-on experience in designing their own community's future rather than reacting to a plan that had been pre-designed for them. From start to finish, the process took six planning meetings in six months. In July 1993, the Lake Street El Coalition unveiled the Pulaski and Lake neighborhood design as a prototype for other transit-oriented redevelopment projects. Less than two weeks later, the CTA agreed to preserve the Lake Street El (now renamed the Green Line), earmarking $300 million to upgrade the line. The Green Line began as a privately funded design process. Now federal and local public funds are being sought to design similar plans for additional stations along the route and ISTEA funds are being requested from the Congestion Mitigation and Air Quality Improvement program. The CTA has offered the required local match of 20 percent. The City of Chicago has committed Community Development Block Grant funds to the project.

The Regional Plan Association (RPA) in New York has established a Transit-Friendly Communities Program to demonstrate the benefits of encouraging growth in existing centers served by rail and transit. The RPA selected four communities to test its combination of environmental simulation and collaborative planning techniques: Yonkers and Patterson in New York, and Princeton Junction and West Windsor in New Jersey. In Yonkers, RPA has been looking to planners, urban designers, transportation experts, and municipal-regulations experts for land-use and design guidelines that give a greater role to Yonkers' historic train station. In February 1994, RPA convened a design charette to explore design and growth options for Yonkers through the use of video simulation. The Environmental Simulation Lab at the New School for Social Research has been working closely with the RPA on this project (model, page 89).

Where's the money going?

Federal transportation law once enticed governments to build roads to national standards by providing them with cheap federal money—each local nickel typically earned 95 federal cents. ISTEA makes federal transportation funds more flexible for a variety of transportation options, and establishes a uniform federal share in both road and public-transportation projects. ISTEA also contains specific funding to protect a community and make it more livable, including an $80-million national scenic byway program. State transportation and

The Intermodal Surface Transportation Efficiency Act, now in its third year, can help architects once again work with engineers to produce better infrastructure, write Lisa Wurmser and Hank Dittmar.

ighway departments must set aside 10 percent of their flexible urface Transportation Program funds for transportation enhance- ients. These categories of projects may apply for the funding:
provision of facilities for pedestrians and bicycles
acquisition of scenic easements and scenic or historic sites
scenic or historic highway programs
landscaping and other scenic beautification
historic preservation, rehabilitation, and operation of historic trans- portation facilities (including historic railroad facilities and canals)
preservation of abandoned railway corridors
control and removal of outdoor advertising
archaeological planning and research
mitigation of water pollution due to stormwater runoff

good design ■ priority?

ut to succeed, ISTEA's reforms must depend on politics and proce- ure. At the end of 1993, the results were still ambiguous: for ample, while 45 states now had enhancements programs and vested in hundreds of non-traditional projects, only 17 percent of ailable transportation enhancements funds had been spent. Less an half of the states with enhancements programs had provided for blic involvement in their decisions. While some states want to velop their own design standards, by and large the official gospel

lowly, our culture's preoccu- ation with getting there is giving ay to focusing on what we find nce we arrive.

road design continues to be the "Green Book" developed by the erican Association of State Highway and Transportation Officials (AASHTO). From the highest order Interstate roads on down, these sign standards presume that the ultimate goal of transportation nning and design is to move as many vehicles as quickly as possible h minimum conflict with other vehicles. Questions of setting, ntext, and community are treated as anomalies in road design.

ASHTO has begun to reorient its design recommendations, wever. In April, its board of directors adopted a resolution address- design standards for the National Highway System (NHS). The IS was created by ISTEA as a system of up to 155,000 miles of stly existing roads, including the 45,000-mile Interstate. The tem is due to be approved by Congress in 1995. Some policy- chers, fearful that the NHS could lead to additional widening and struction of roads to bring them up to federal standards, have bed the program "Son of Interstate." The AASHTO resolution oses "any Federal requirement to establish a single standard for NHS," and recommends that "design responsibility for NHS routes be delegated to the states." The resolution also calls for environmental, scenic, historic, community, and preservation concerns to be made a part of design standards for the NHS, as well as standards that promote access for bicycles and pedestrian traffic.

Since most miles of the NHS are in rural areas, techniques for heritage-corridor management promise to protect natural resources and small communities while serving transportation needs. The Chattahoochee-Flint Regional Development Center (RDC) advanced a 56-mile, $5-million Heritage highway in rural west Georgia, combining 20 historic and cultural sites, and recreational, biking and hiking opportunities along a route made up of both state and federal highways. The RDC used the prospect of ISTEA enhancements funding to galvanize a steering committee of local citizens, business leaders, and public officials. The project was ranked fourth by the Georgia Department of Transportation among a priority list of 40 projects selected for funding in the non-metropolitan round by the agency in 1993.

Reclaiming spaces for the public

Part of the architect's job in the post-Interstate era is to help transportation engineers reclaim for use by the public those spaces that have been over-designed for vehicles and under-designed for people. For example, architects Russell Claxton and Shannon Fickling have designed an ISTEA enhancement project to re-establish Civic Square in downtown Macon, Georgia (drawing above left). The city recently cleared the last of four contemporary buildings which had blocked the vista between City Hall and Macon Auditorium. Claxton and Fickling worked to define the central space between these buildings, replant trees using Small Business Administration funds, and realign streets and sidewalks to make the downtown more walkable.

"ISTEA has engaged architects in the transportation planning process," says Claxton, a partner at Dennis and Dennis in Macon who also serves on the state's enhancements advisory committee. "Transportation departments used to be thought of as closed entities whose regulations influenced the work of the architect, like building inspectors or the water department. Now architects are in a position to influence transportation."

The Connecticut Department of Transportation has taken a second look at reversing the over-engineering of Route 34 in New Haven. With the help of civic groups, economic development and business interests, Yale University and area medical facilities, ConnDOT has engaged a multi-disciplinary design team to convert the former Route 34 right-of-way into a landscaped boulevard aimed at "making vehicles behave" through the use of actual and perceptual techniques that slow cars down. The new plan calls for a four-lane roadway divided by a landscaped median. On the north side, the boundaries of the right-of-way are irregular, creating opportunities for vest-pocket parks and a meandering bikeway. New open spaces are to be created at cross streets, and the road will terminate at a regional park to serve all the communities connected by the route.

... the architect's job in the post-Interstate era is to help transportation engineers reclaim public life from spaces under-designed for people...

The plan for the boulevard will create a market incentive for retaining medical services near downtown by developing a pedestrian environment and open space. Consultants on the project were Holt, Wexler & Farnum; Roth and Moore Architects; Ehrenkrantz & Eckstut Architects; Allan Davis Associates; Science Park Associates; Travers Associates; Diversified Technologies; and the TPA Design Group.

The Olympic Games and ISTEA funding have both spurred a walkways plan that has been on the books for two decades. The Atlanta University Center/West Side Pedestrian Corridor System is sponsored by a consortium of six black colleges in an area adjacent to downtown Atlanta: Clark Atlanta University, Interdenominational Theological Center, Morehouse College, Morehouse School of Medicine, Morris Brown College, and Spelman College. The facilities will play host to several Olympic events, and all hope the walkways plan will give new life to the area, which suffers disproportionately from poverty and disinvestment.

"Architects always have the opportunity to design buildings," says project manager Danita Brown, the Project Manager for the Atlanta University Center and the Corporation for Olympic Development in Atlanta (CODA). "But we don't always get the chance to build neighborhoods and communities. Yet I think a lot of architects are in this profession because they want to serve communities."

A future for sustainable communities

Through ISTEA's comprehensive planning process, design professionals can help define new goals for our communities' transportation investments. The following principles reinforce the planning requirements listed in Sections 134 and 135 of ISTEA:

Conservation: A conservative approach to transportation would stress use of resources for maintenance and rehabilitation of existing transportation infrastructure. The planning requirements which reflect this goal include a new set of management systems to take stock of existing transportation facilities and services, and monitor improvements to them. Under ISTEA's planning process, the findings of these systems must be used to recommend the best alternatives for a given transportation problem.

This value is reflected other ISTEA planning requirements, especially consideration of how to preserve existing transportation facilities and to meet transportation needs by using them more efficiently. Most specific to this goal is the requirement that agencies consider transportation-system management and investment strategies that make the most efficient use of existing transportation facilities.

Options: The nation should seek to provide Americans with real [illegible] driving, riding transit, bicycling, [illegible], train, truck, or airplane. These modes may [illegible] associated with them—in time, money, or [illegible] should reflect capital and operating costs as [illegible] environmental costs and benefits. ISTEA requires planners to incorporate bicycle and pedestrian facilities in projects wherever appropriate, and to weigh expansion of public transportatio services.

Integration: Transportation facilities should be designed to support many options and to accommodate various modes of travel—a road should provide safe, convenient, attractive opportunities for the pede trian, bicyclist, and transit passenger as well as the local auto user, even if this means some sacrifice of speed. In addition, transportation systems and facilities need to be integrated into the community and into the social, built, and natural fabric.

ISTEA requires the coordination of transportation decisions to connect international border crossings, ports, airports, major freight distribution routes, national parks, recreation and scenic areas, monuments and historic sites, and military installations. It also requires that metropolitan areas be connected and, to ensure this, that their plans and programs be coordinated and reconciled with statewide transportation plans and programs.

Access instead of mobility

The Constitution guarantees the pursuit of happiness, not pursuit of speed. The goal of our transportation system should be to provide all Americans with access to jobs, decent housing, the necessities of life, and individual fulfillment. This goal also incorporates notions of socia

ISTEA signals the official beginning of the post-Interstate era in the United States.

justice, and recognizes that current transportation investment patterns have tended to favor those who can afford mobility, not those who are left behind in rural isolation or urban deterioration.

One critical planning concern in ISTEA calls for assessment of the overall social, economic, and environmental effects of transportation decisions. The other is that the effect of transportation decisions on land use be considered. ISTEA also requires that recreational trave and tourism needs be addressed.

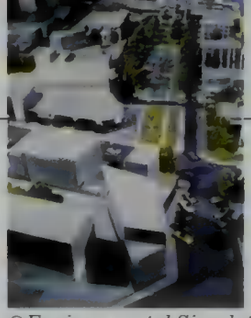
Strategic investment

Infrastructure investment does lead to jobs. But transportation investments should be viewed as means to enhance regional and national competitiveness. Given limited resources, this goal would target investment to places where it is most needed to cure traffic congestion or to better integrate land uses.

ISTEA calls for greater local involvement in transportation decisio affecting local economies and quality of life. States must consider th



Baker Airport Busway



©Environmental Simulation Center.

Wabash Bridge, part of an 8-mile bus/ roadway facility, Pittsburgh (far left). Phase II (multi-purpose plaza and new park) of Larkin Plaza, Yonkers, New York (near left).

ansportation needs of non-metropolitan areas by consulting with :al elected officials, and must incorporate the plans of all metropoli- n areas within the state. ISTEA stresses fiscal responsibility by quiring state and metropolitan agencies to come up with funding urces for all proposed projects, and by urging agencies to examine novative mechanisms for financing projects.

formation technologies

ıe promise of the new Intelligent Vehicle Highway System initiative der Title XI of ISTEA is far greater than the ability to put more pacity onto our roadways. IVHS can be the means of building feed- ck loops into our multi-modal transportation system, so that it can operated and managed in real time. These information technolo- s can enhance transit performance, provide the user of the system h meaningful information on route or mode choices, and even luce safety conflict between different modes. Realizing the promise managing our system in real time instead relying on 20- and 30- ır forecasts could be a key benefit of the new information hnology.

e lack of a specific link between the IVHS program and the ITEA planning requirements means that planners must specify h a link in local planning processes, as it relates to other factors h as reducing traffic congestion, measuring and monitoring the acts of transportation investments, and expanding public trans- tation services.

oiding non-renewable resources

most obvious resource to conserve is oil. But this goal goes well ond oil use to encompass the use of materials in roadway con- uction which employ recycled and recyclable materials, as well as erials that last longer. We need to finally recognize that the cept of "non-renewable" also extends to qualities that are difficult easure: communities, history, open space, wildlife, and farmland. should design a transportation system that preserves these urces. ISTEA says transportation plans must be checked for con- ency with applicable federal, state, and local energy-conservation grams, goals, and objectives, and must include ways to reduce or vent traffic congestion and motor-vehicle travel.

federal government seems to have made a permanent shift on topic of transportation investment. For the first time in more than decades, the U.S. Department of Transportation and the Depart- t of Housing and Urban Development have begun to view their ective roles in fostering better community development and sportation connections. Proposed by the two agencies in the ident's budget last January, the Livable Communities initiative d provide $30 million next year to communities to develop trans- ation facilities which help give new life to communities by grating mixed uses or providing walkable environments. The ident's Executive Order on Environmental Justice, issued early 93, is intended to raise the issue of the location of facilities and impact on distressed neighborhoods and poor people.

The change is not universal, however. ISTEA included a set of tools for investment which, without clear operating instructions, could undermine the law's intention of rationalizing transportation decisions at the community level. The National Highway System, mentioned earlier, could overwhelm other efforts to create sound, sustainable transportation options. Fortunately, Secretary of Transportation Federico Pena says he plans to establish a National Transportation System, which includes the NHS, but also weaves in other nationally significant transportation routes. However, some industry groups are keen to make the NHS the next "bigger-and-faster-is-better" investment model, leading to the diversion of funds from other parts of the system and to a flurry of new beltways and road widening in exurbia and across America. If this happens as part of a planned "upgrade to national standards," then any long-term approach to transportation will be doomed.

As noted, ISTEA's establishment of an Intelligent Vehicle Highway System could include public transportation as well as highway transportation. Transportation consultant Donald Camph of Aldaron, Inc. in California has called IVHS "a double-edged sword" providing two possible visions for America's future: either more and bigger roads, now souped up with computer technology, or "an opportunity to harness technology to empower people by providing access— to jobs, to health services, to cultural and recreational opportunities—and by helping to address questions of social equity, environmental quality, and community cohesion." So far, Camph emphasizes, "early indications give reason for concern...IVHS appears to become the transportation sector's equivalent of the military-industrial complex ... a harmonious but perhaps myopic partnership between purveyors of widgets, state DOT officials, and local public works directors."

While the projects discussed here point to a renewed partnership between architects and engineers, real change can only occur when Americans cease to enshrine personal mobility (getting there) at the cost of individual access (being there). ISTEA's provisions strike at the heart of the business-as-usual approach to transportation: they call on planners to evaluate how transportation affects the overall social, economic, and environmental well-being of communities.

In his new book, *Reclaiming Our Cities and Towns*, Australian activist David Engwicht wants to replace the mechanistic thinking, which has led us to segregate and specialize community functions, with a renewed focus on "interdependence and mutual exchange—not necessarily motion." Slowly, our culture's preoccupation with getting there is giving way to focusing on what we find once we arrive.
Lisa Wormser and Hank Dittmar

Lisa Wormser is communications manager of the Surface Transportation Policy Project, a coalition of over 100 groups founded in 1990 to "ensure that transportation policy and investments help conserve energy, protect environmental and aesthetic quality, strengthen the economy, promote social equity, and make communities more liveable." Hank Dittmar is its director.


End of the Line

The Victorian railroad terminus has been reinvented, welcoming Continental visitors after their journey through the just inaugurated Channel Tunnel.

Waterloo International Terminal
London, England
Nicholas Grimshaw and Partners



Nicholas Grimshaw's Waterloo Terminal is a response to the novelty of an international train station in Britain, that reinvents the heroic railroad termini of the Victorian era on a difficult site. It does this magnificently, and stands now as a tribute to computer-aided design, linear stiffness analysis, and laser surveying.

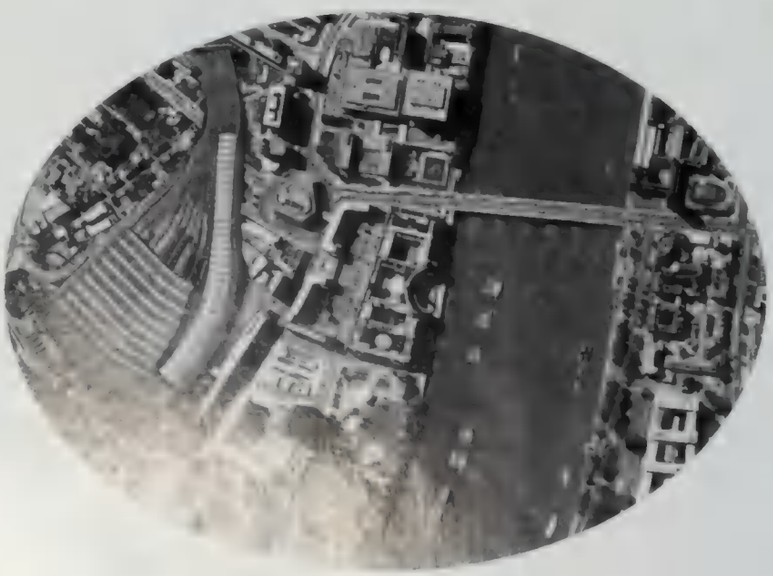
The recipe is simple. Take the standard Victorian glazed-shed railroad terminus—as is best shown in London by Saint Pancras station, a building whose age is precisely the 125 years of Waterloo's design lifetime. Then complicate practically every parameter imaginable. Where there was a level site, let there be contours. Where there was a straight axis, add curvature—a squashed S-bend in this case. Where there was an enclosure of constant section, now let it taper. Where there was symmetry, let there be asymmetry.

The five tracks that carry trains directly from the Channel Tunnel must worm their way around the side of the existing Waterloo Station and squeeze past buildings on sites hard by. Clearing these and rising over major roads requires the track—and thus the building—to bend and undulate. The 1,312-foot long canopy opens out from 115-feet wide at the "country end" to 180 feet at the "town end" (for comparison, the ironwork at Saint Pancras spans 240 feet). The main superstructure unit is a three-pin arch with the central pinning offset to provide sufficient overhead clearance for trains on the outside track. Either side of this pin on each of the 36 trusses set out at roughly 12-foot intervals is a bow-string arch. The truss is internal on the east side, flipping onto the exterior to the west. The secondary structure running along the line of the tracks is braced back to these primary frames both on the exterior and the interior. With the gradual broadening of the arch as it reaches the "town end", it might be supposed that the repetition of parts that is usual in such structures has been sacrificed. Not so, says Anthony Hunt, the structural engineer for the roof and other innovative details. "There are more repeating components than you might at first suppose." Many of the custom-developed castings are standard throughout, but thanks to the use of butt welding of steel tubes of different sizes rather than plate welding of conventional I-beams, many of the structural members are likewise standard.

The east side of this span is clad in rippled stainless-steel decking. Water runs off at the dips; at the crests, the decking does not quite meet and glazing completes the covering. The west side is glazed with sheets that are free to move and sealed with accordion gaskets and wiper blades. The two roof treatments provide for a dramatic variation of light within the building. At night, uplight reflects off the inside of the steel roof. During the morning, there is a chiaroscuro effect, as shafts of light streak across the platforms. In the evening, the hall floods with low sunlight.

The structure is highly labile, a living, breathing thing almost, that moves to accommodate the forces of everything from decelerating trains to snow loads to winds blowing through the open hall. The overall effect of the superstructure is like the exoskeleton of some arthropod squirming through a tight spot. Grimshaw's building may not consciously draw on the themes of the remarkable book, *On Growth and Form* by D'Arcy Thompson and published by Cambridge University Press, which describes how natural forms are governed by physical constraints (although both he and Hunt dimly recollect having read the work), but it does illustrate that the segmented-invertebrate image stems not from the wish to create a zoomorphic work of architecture, simply from site constraints.

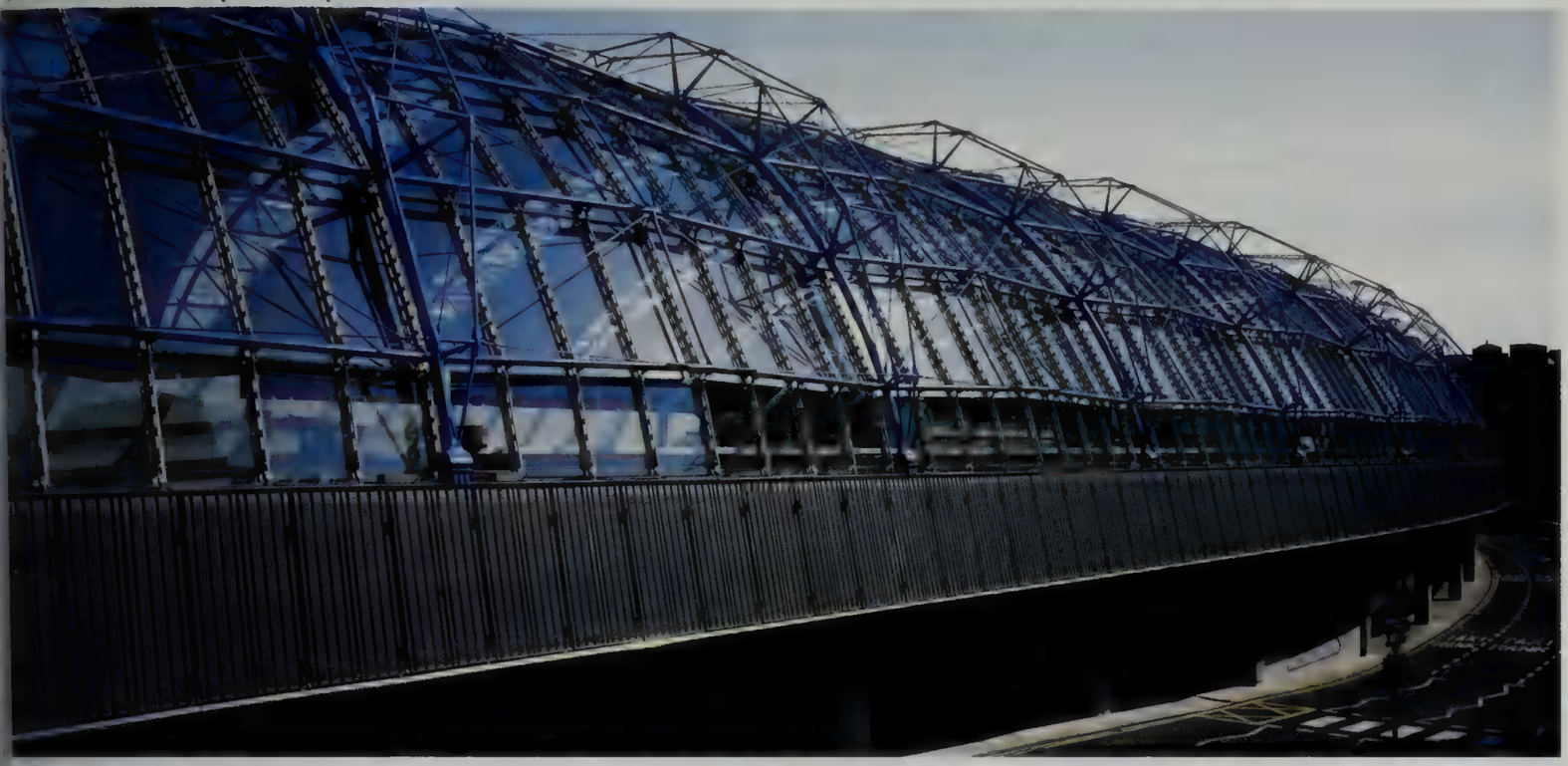
The superstructure represents just 10 percent of the £131 million (nearly $200 million) cost of the project. But in considering passenger flow, the paradigm is no longer the Victorian railroad terminus but the modern airport. Departing passengers buy their tickets at open counters rather than at windows. Stores and cafés are located on a mezzanine below track level, along with seating similar to an airport departures lounge, even though waiting times for trains should be just a few minutes. Baggage is not checked for security reasons and because research showed that passengers would only bring more of it. Arriving passengers on their way down from track level to the street or the London Underground will pass through the same mezzanine. As they submerge into this labyrinth, it is the sense of arriving in the hall that they will take away. Or, they may recall a glimpse of the Houses of Parliament they caught as their train pulled in. Ironically, vacillation by the present government over upgrading track between the tunnel and London means eventually that most of the fastest trains from Paris and Brussels will arrive at Saint Pancras, not Waterloo Station. The choice of arriving tortuously in the 21st Century or expeditiously in the 19th seems an excellent metaphor for much in contemporary British life. *Hugh Aldersey-Williams*

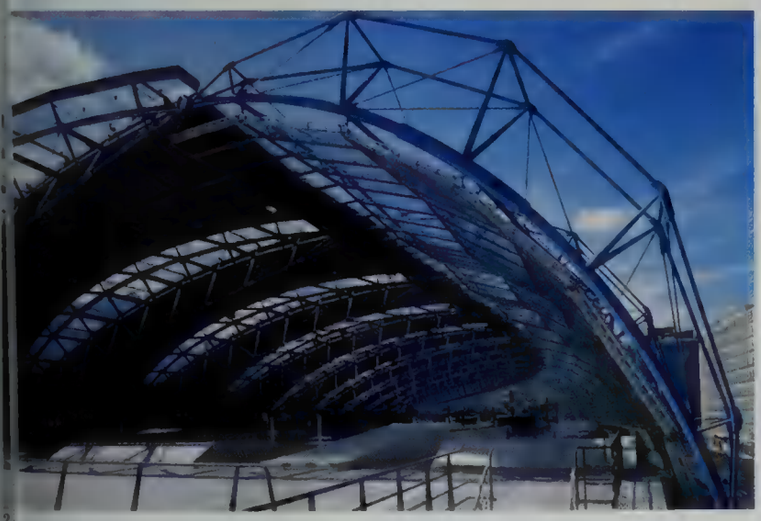


The £130 million (nearly $200 million) Waterloo International Terminal squeezes in alongside tracks to the main Waterloo Station (left). In this aerial view, Big Ben is top right; the Royal Festival Hall and National Theatre are at the bottom.

Grimshaw's structure (left) can appear rather heavy viewed from a distance where the bright blue steelwork appears foreshortened as a dense haze over the terminal. From inside the hall (2) or close to (4), the lightness of touch is impressive, the more so considering the requirement that the structure should be able to withstand the catastrophic eventuality of a runaway train's knocking out the ground pin of one of the spans. This means that each structural component must in effect serve double its apparent purpose. Below the track-level hall, the terminal is much like an airport (3), and the lower part of the western flank where arriving passengers emerge at first reinforces the parallel (1). Only the sharp undulation in the access road gives the game away as one remembers never having seen any airport structure on anything but dead level ground.

Jo Reid and John Peck photos except as noted





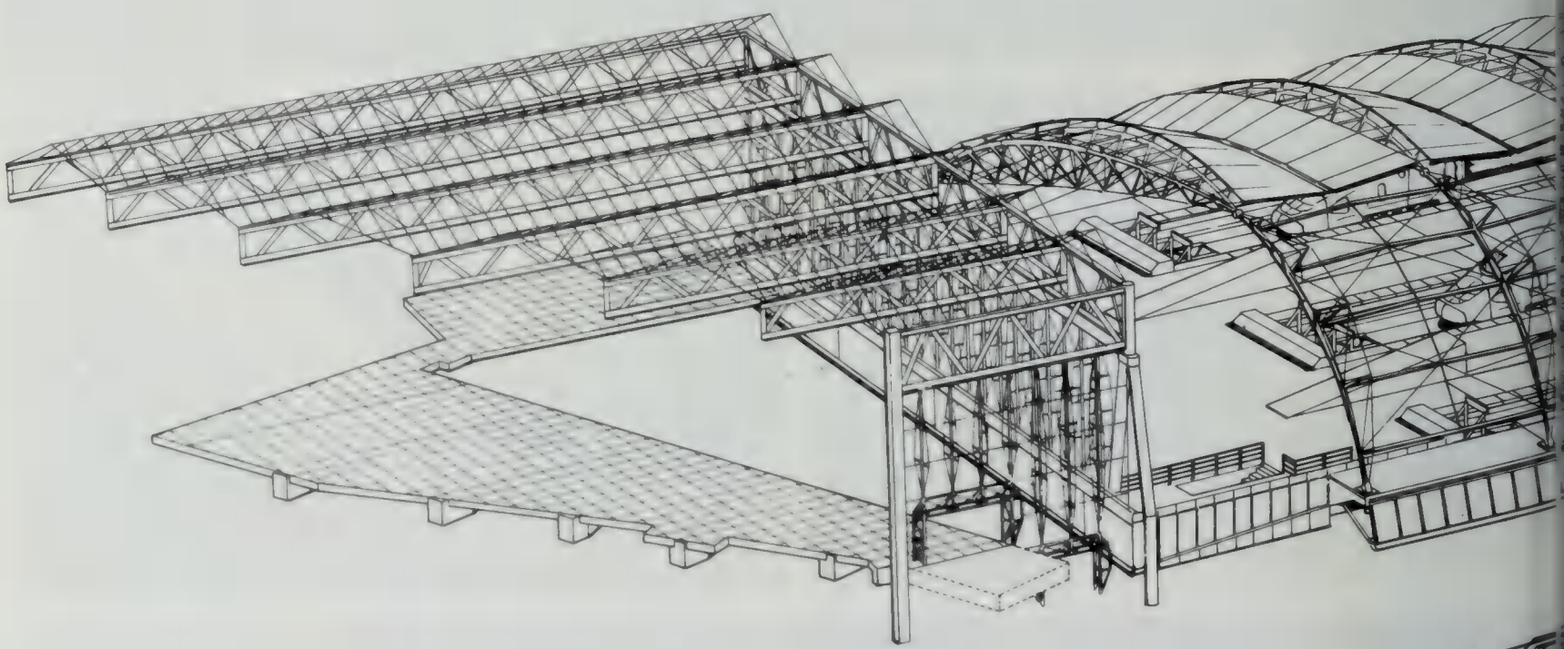


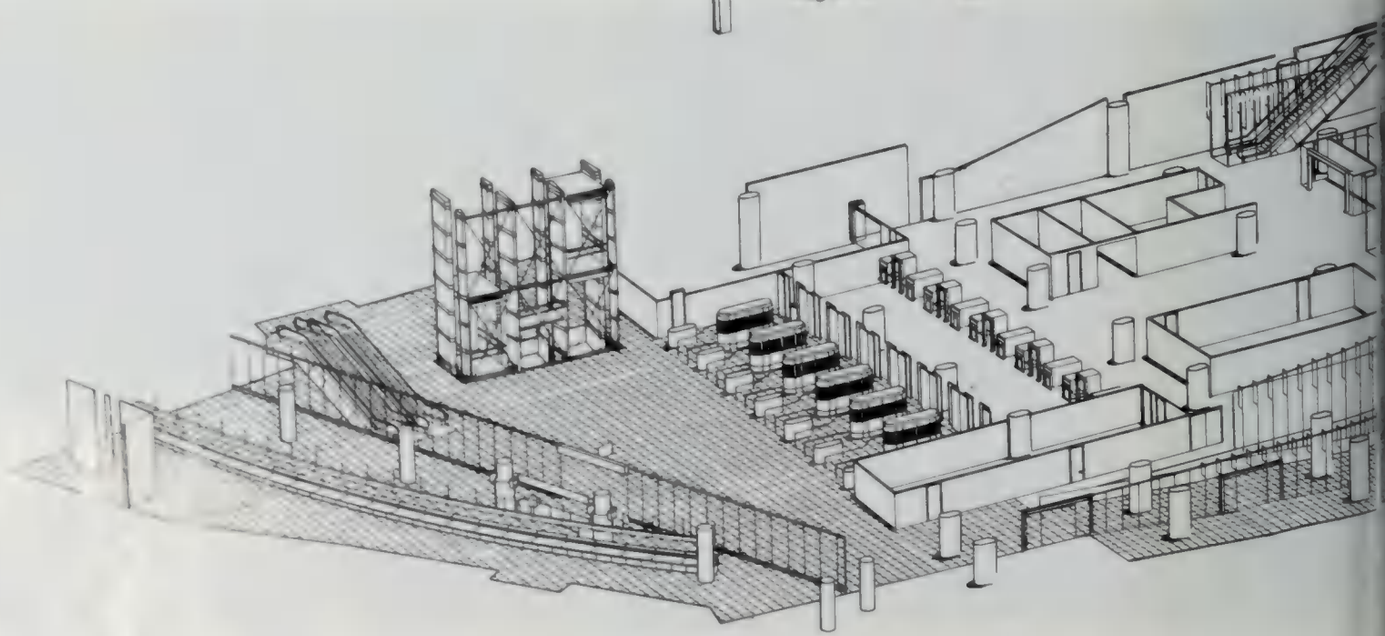
3



Below track level, the building functions in layers, the departing passengers waiting on a mezzanine and arriving passengers moving down ramps to ground level. The architects have attended diligently to the impedimenta that surround us when we attempt to travel to another country. Both sets of passengers use some of the same circulation pathways, but at different times. Their segregation for immigration purposes is made possible by sliding doors that act as a valve, opening for arrivals and departures in tune with the train schedules. There is a feeling that this is somehow a temporary measure, to be swept away when it occurs to someone that it is nonsense to monitor the free movement of people and their possessions between foreign lands. Evidence of this emerges in the peculiar design for the passport checkpoints. There is some doubt as to whether Britain



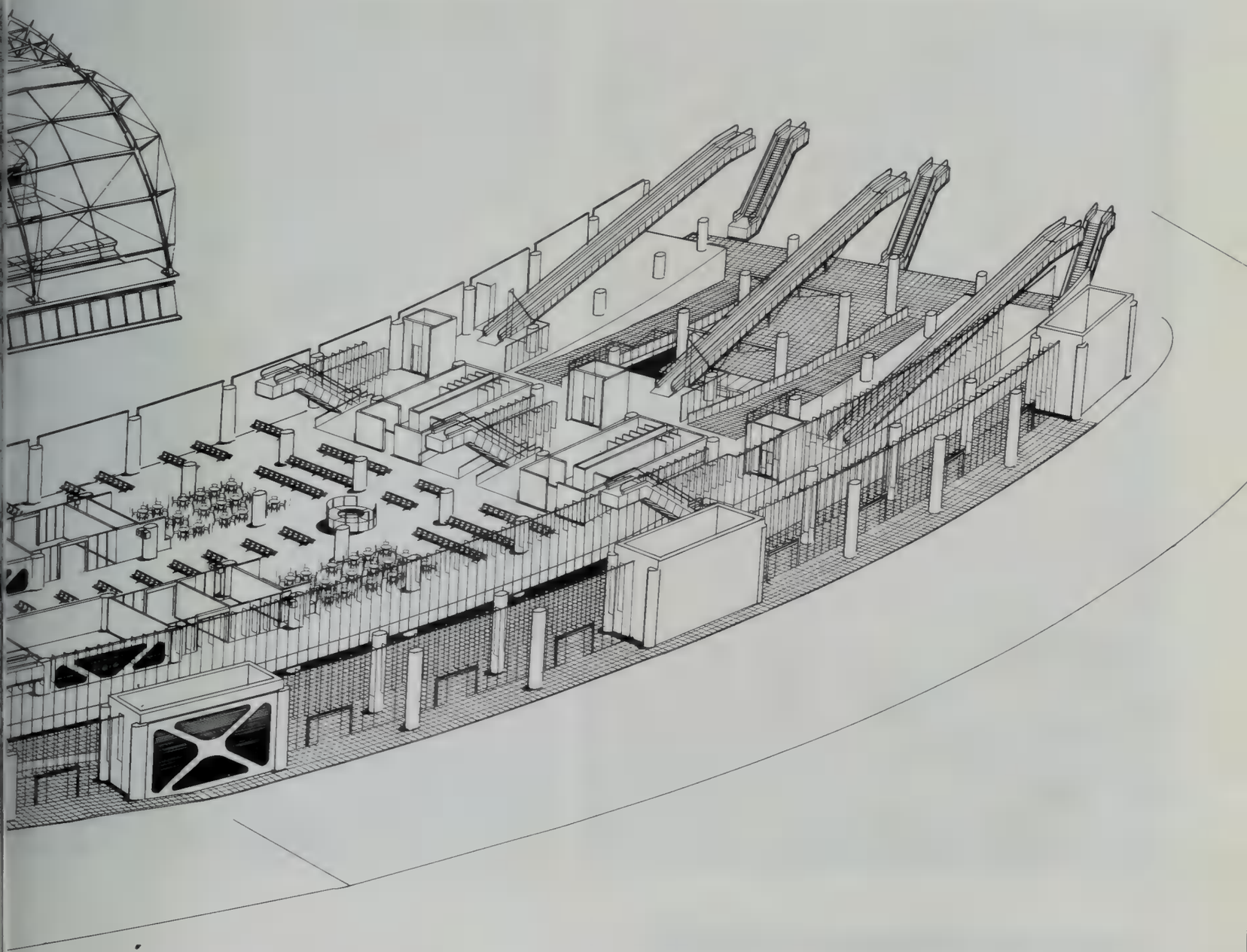


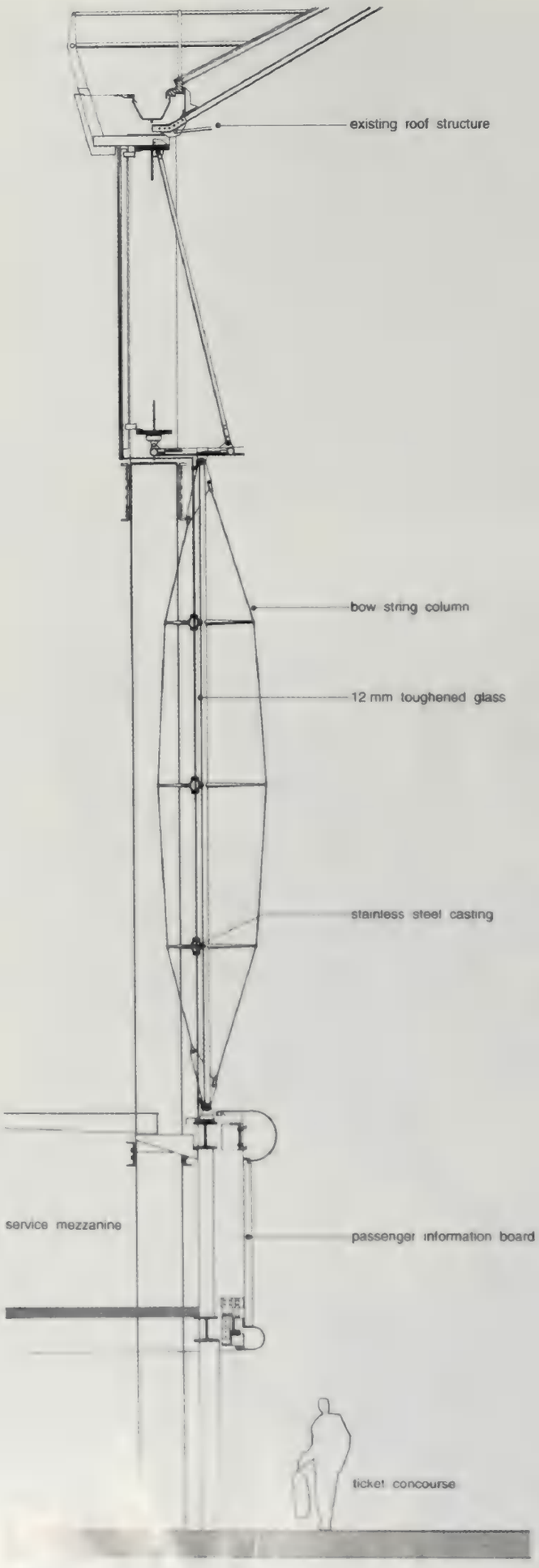


© Keith Collie/Mick Thomas photos



regards train-board passport checks as adequate and might demand checks on its soil. The architects have allowed for all eventualities with hulking mobile units rather like Daleks that can be deployed if required. Not all the circulation is as transparent as one might like. One has visions of people struggling with carts of baggage on the ramps that one negotiates up to track level. And travellers heading for the London Underground must burrow around in the depths of the building to find their way out, a messy outcome of attempting to reconcile the requirements of two transportation clients while fitting around the substructure of Waterloo's pre-existing British Rail and Underground stations. Throughout the station, many installations such as the ticket booths (left) and signage (right) have been designed to blend with the overall tone.





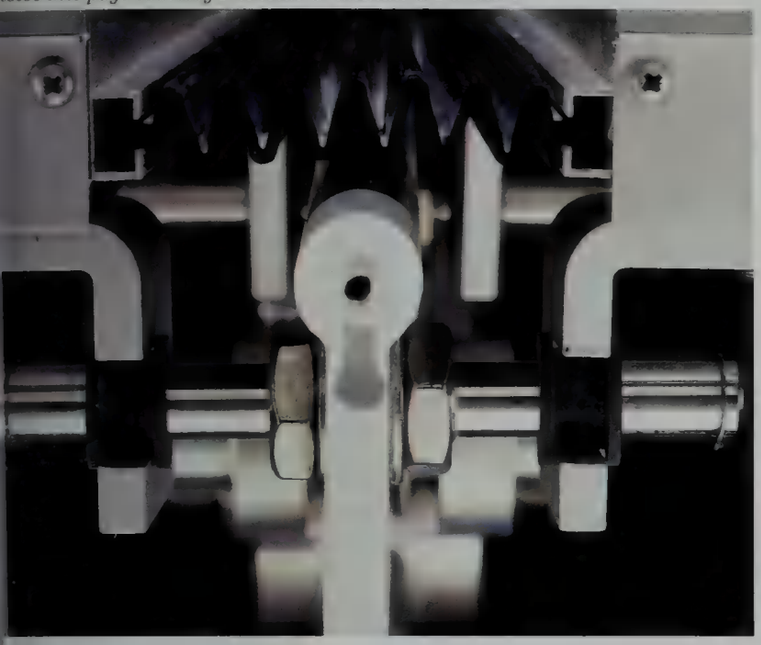
A new wall rigged exactly like the mast of a yacht (left) provides as near transparent a view as possible from the concourse level of the main part of Waterloo Station (Europe's busiest, serving southern England) across to the new terminal with its gleaming new Eurotrains and blue superstructure.

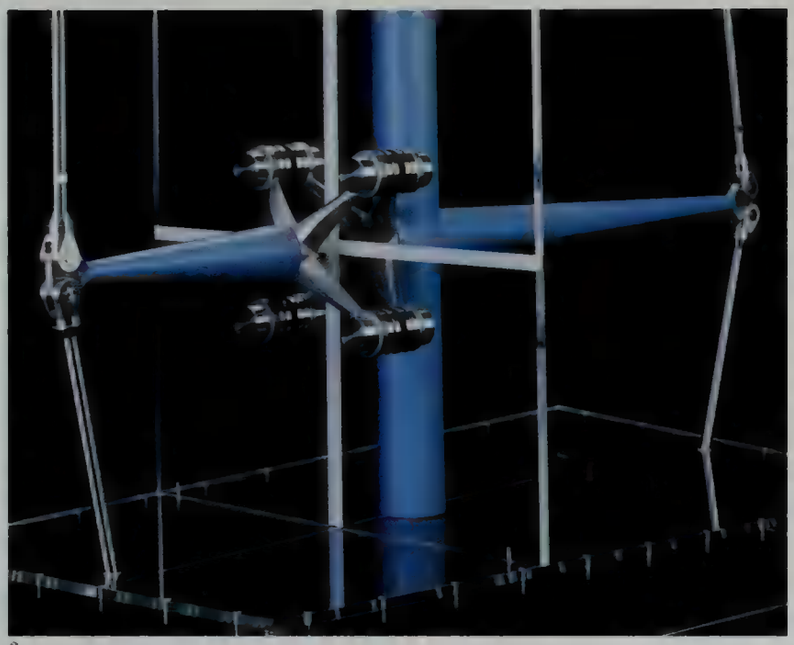
A variety of custom stainless steel components was developed by the architects and YRM Anthony Hunt Associates, without, as is often the case, notable encouragement from the glass manufacturer. The detailing of these components, as well as of other custom-designed items from luminaires to washbasins, is superb and marks a notable improvement over some of Grimshaw's earlier buildings.

Credits

Project: *Channel Tunnel Railway Terminal London, England*
Owner: *British Railways Board*
Architects: *Nicholas Grimshaw & Partners—Nick Grimshaw, Neven Sidor, Directors-in-charge; Andrew Whalley, Associate-in-charge*
Structural Engineers: *YRM Anthony Hunt Associates (roof); Sir Alexander Gibb and Partners (foundations); Cass Hayward and Partners; Tony Gee and Partners; British Rail Network Civil Engineer (viaduct)*
Consultants: *J. Roger Preston & Partners (serivces); Davis, Langdon & Everest (quantity surveyors); Bovis Construction (construction manager); Lighting Design Partnership (lighting); Henrion, Ludlow, Schmidt (sign consultants); Arup Research and Development (fire engineering)*

hotos this page courtesy Nicholas Grimshaw & Partners





2





4

Accordian gasket detail.
Detail of front glass to roof.

2. Bowstring wall detail.
4. Patterns for castings in roof structure.

Making Art of Trash



Phoenix used its percent-for-art program to make a public showpiece out of its new waste-management facility.

27th Avenue Solid Waste Management Facility
Phoenix, Arizona
Linnea Glatt and Michael Singer, Designers
Black & Veatch, Engineers



The 27th Avenue Solid Waste Management Facility in Phoenix challenges two conventions: that a garbage plant is unsightly and should be hidden from view, and that the city's eight-year-old percent-for-art program, which allocates up to $1 out of every $100 in municipal construction money to public art, produces, at best, grace-notes for architecture. Credit for this new perspective goes to the Phoenix Arts Commission's founding director Deborah Whitehurst and Gretchen Freeman, public art program manager, who joined with Public Works Department head Ron Jensen to conceive the project not only as a place for garbage transfer, but also as a symbol of the environmental impact of human waste. To realize this ambitious vision, they redefined the public-art program, making it "a tool of urban planning," according to *New York Times* critic Herbert Muschamp—a timely strategy considering infrastructure's growing importance on the national agenda.

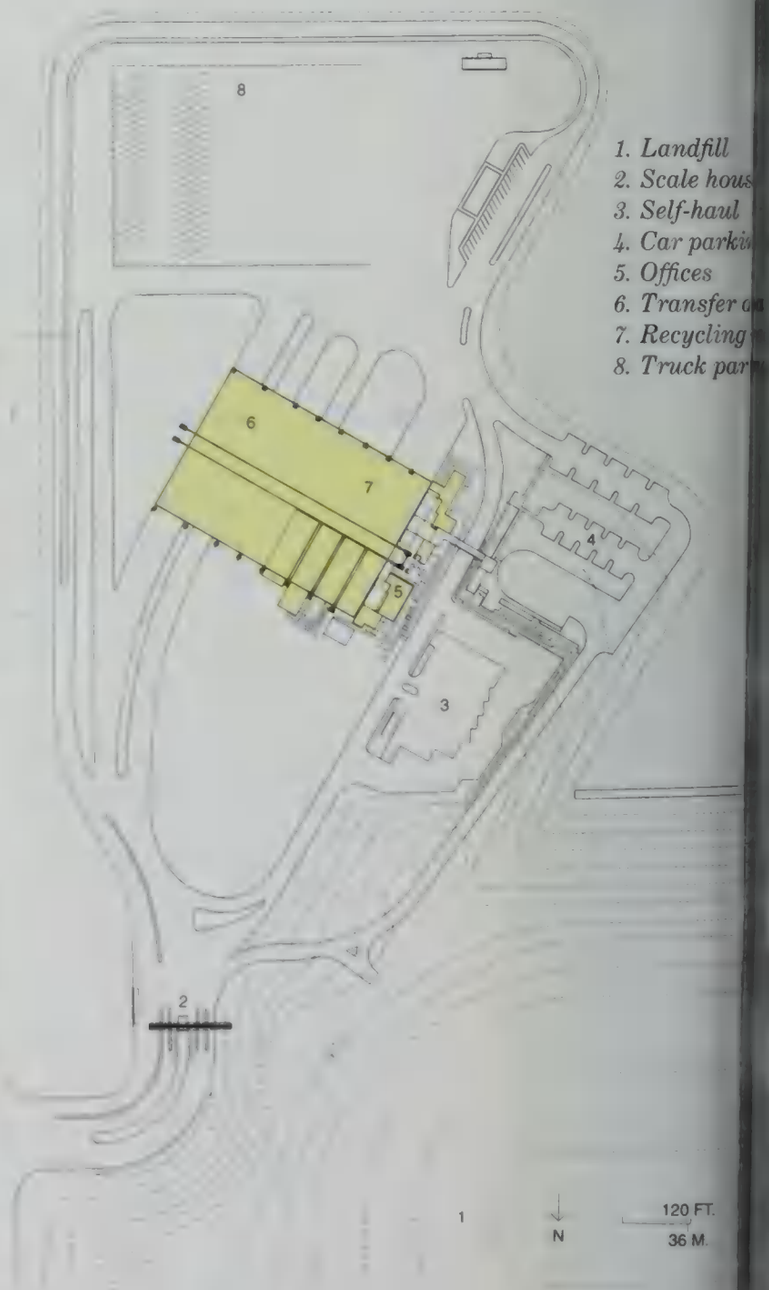
The site designated for the facility is in southwest Phoenix, adjacent to a 147-acre landfill, recently topped-off after 15 years of dumping. Initially envisioned as a garbage transfer station, where refuse would be sorted and then trucked to a regional landfill 20 miles away, the project was reworked to accommodate the city's growing recycling program, whose environmental benefits Jensen wanted to stress. In 1989, the Arts Commission asked artists Linnea Glatt and Michael Singer (who work independently) to team up on a conceptual design, making them the impresarios of the project. They reviewed a preliminary scheme developed by engineering firm Black & Veatch, setting out, in their words, "to overcome the 'not in my backyard' syndrome."

Glatt and Singer repositioned the building's functions as proposed by Black & Veatch to allow prevailing winds, which move from west to east, to carry odors away from the site. They also rerouted traffic, separating access by activity and vehicle size. Now visitors and employees take the high road, ascending the landfill for an bird's eye view of the facility and sweeping mountain vistas, purposely straddling the "built" and natural environment. Self-haulers take the middle road to the recycling drop-off area, passing the vaguely Frank Lloyd Wright-inspired terraced concrete-block forms of the administrative wing, oriented toward downtown Phoenix, on the complex's west side. Dump trucks take the low road along the east side, descending into the vast shed for garbage transfer.

Dominating the complex is a massive steel truss, the main structural support for the roof and a billboard of sorts for the facility. Painted a grayish green, the truss and the lush desert vegetation of the courtyards cast a green glow on the muddy cement block—an appropriately green aura for a facility that will eventually cut landfill dumping by 30 percent. *Karen D. Stein*



A 480-foot-span steel truss dominates the east facade (above). The roof is hung from t truss, creating a flexible two-acre interior space. All columns line the exterior except for two interior supports, which separate garbage transfer and recycling areas. An outdoor amphitheater between offices is us for public educational events (opposite).



1. *Landfill*
2. *Scale hous*
3. *Self-haul*
4. *Car parki*
5. *Offices*
6. *Transfer*
7. *Recycling*
8. *Truck par*









©Craig Smith photo



Administrative offices and visitor areas are arranged in small clusters around a series of shaded courtyards and walkways (top left and opposite). The main facility is to the west and large windows (bottom left) allow visitors to look inside the transfer and recycling areas (above).

Credits

27th Avenue Solid Waste Management Facility
Phoenix, Arizona
Designers: *Linnea Glatt, Michael Singer-artists-in-charge; Sterling McMurrin, project architect; Richard Epstein, Dino Sakellar, architectural team*
Engineers: *Black & Veatch—Dave Mahaffay, principal-in-charge; Brad Hemken, project manager; Doug Hubble, project architect; Richard Reeves, project engineer*
Consultant: *Alagia Engineering (structural)*
General contractor: *Joe E. Woods*

Up Close

Artists as architects. "What is unusual about this project is that it got built," says artist Linnea Glatt of her and Michael Singer's direction of two teams of architects and engineers. Sterling McMurrin, who worked on the artists' team, observes: "Artists aren't typically considered the people to lead a team, but as an architect it was important to learn that we always need to listen to each other." Glatt and Singer's dominant role in the $15-million Solid Waste Management Facility's design has been criticized for taking work away from project-starved architects, or, at the very least, diluting their authority, a role reversal of the percent-for-art program, where often the site, size, and content of an artist's project is predetermined by the architect. Says Glatt of the debate: "This is indeed the territory of architects; it's the territory of anyone who wants to make this project an important place for the city."





Cool Chiller



Tom Bonner photos



e south side (opposite) is a high-bay struc-re with a full basement housing the central int functions. The design evokes the poetry this high-tech installation along the great)-foot facade with a subtly scaled series of ayed panels. Single-wythe brick panels in k brick with blue brick accents mark the s turbine generators and absorption rigeration chillers at the ground floor el. At the upper level, the irregular nted metal screens cloak but do not ceal the cooling towers and the heat overy steam generators (HRSGs). The two SG stacks rise to a maximum allowed feet. On the north front (above), an open tal stair system serves facilities staff ces and workshops.

rleaf: an aerial view from the southeast ws the plant in relation to the main pus (to the right), campus parking, and dential Westwood (above the stacks). The pus police station is at bottom right.

As infrastructure projects go, UCLA's new central energy services facility had all the cards stacked against it. A container for gas turbines, boilers, chillers, and exhaust stacks, plus miles of pipes, ducts, and raceways, it was also a possible source of noise, vibration, and pollution, and would occupy 450 feet of frontage on an important street to a height of 125 feet. It would be a close neighbor to the student residential area of a major campus and a stone's throw from the well-heeled and articulate communities of Bel Air, Westwood, and Beverly Hills (in a test at the Bel Air Country Club, a bright orange metereological balloon was hoisted next to where the stacks would go, to see if it was visible from the club. It wasn't). This was the challenge the owner tossed to the design-build team of Parsons Main/Kiewitt, with the architects Holt Hinshaw Pfau Jones as architectural consultants. The challenge was part planning, part design, part execution.

Dispersed all over UCLA's sprawling campus was an aging, inefficient, pollution-causing network of boilers and chiller units supplying hospitals, labs, food services, and other campus functions. Electricity was bought at high cost from the Los Angeles Department of Water and Power. In 1987, the University opted for a single, central plant that would supply steam, chilled water, and electricity to the entire campus, centralize control, and reduce air pollution. To enhance efficiency, the University resolved to incorporate co-generation, which uses waste heat to produce steam and more electricity; it dates to the 1960s and requires a very large plant to yield benefits.

The decision was a bold one. Co-generation plants work best when on a single floor, but the 8-acre site had to accommodate chiller and power generating equipment, offices and workshops for the campus facilities department, truck access and a work yard, resulting in a three-story structure—a massive presence.

In the words of Parsons Main project architect Mark Griffith, hired halfway through the project as liaison with Holt Hinshaw Pfau Jones, "here was an industrial type project that needed an architectural solution. Normally a co-gen plant of this type is found in an industrial or rural area, not a suburban campus." The architectural consultants' role was crucial not only in dealing with the planning and design challenges of what one team member called "this elephant," but also in reconciling, in their dealings with what was essentially an engineer-dominated design-build team, traditional mindsets with the mandate to find an appropriate form for a strictly industrial building.

Holt Hinshaw Pfau Jones met with the engineers at Parsons Main and together came up with a unique solution of stacking a co-gen plant on three stories instead of one. Says Wes Jones, design principal (who has since founded his own firm), "You have some real cutting-edge technology here. There's no need to hide it." In the solution, the two heat-recovery generator stacks are a major feature, like on the old ocean liners. At the middle levels, steel screens are designed not to hide but to reveal seductively, like a veil, the high-tech equipment behind. At street level, brick in two shades—pink, and blue for accent—are arranged in panels. These are suspended on the north facade, built up on the south, and splayed in a slightly irregular geometry, to create a lively street rhythm.

"It's easy to post-rationalize a design solution," says Marc Hinshaw, a principal-in-charge with Paul Holt, "and while the design is without question a testament to the power of technology, what really happened here is a sensible response to the program—the need to conserve site area, to maintain air quality, to save money."
Stephen A. Kliment



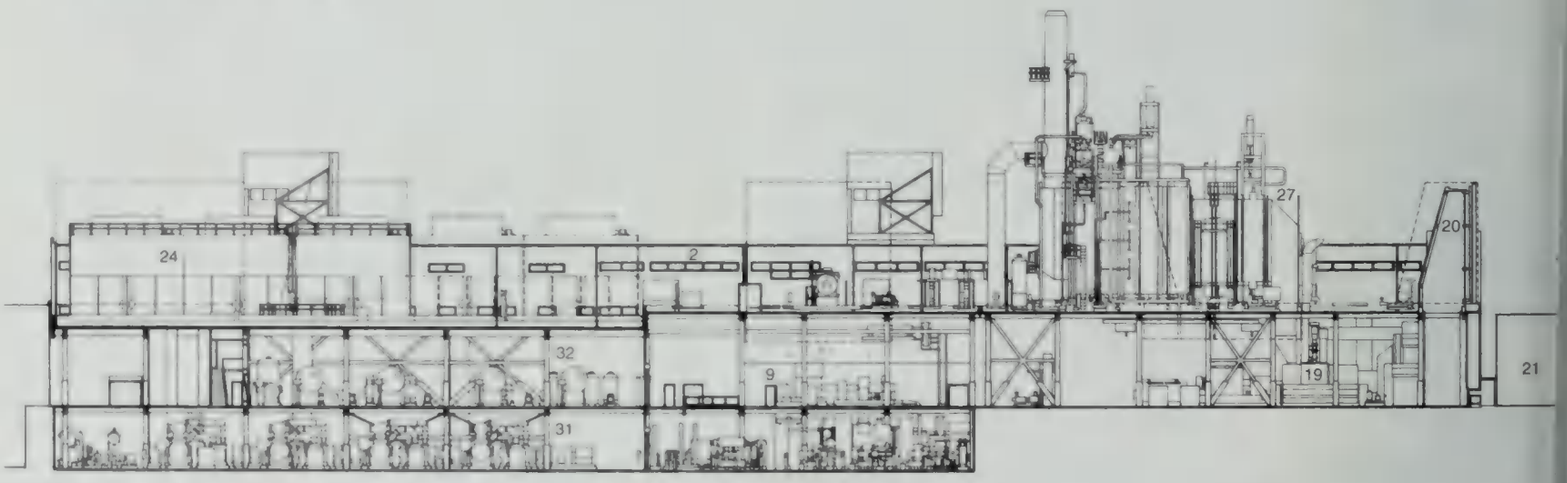


Overall floor area of 180,000 sq. ft. is divided about equally into plant space on the south or "uninhabited" side of the plan, and facilities offices and workshops on the "inhabited" north. Section B-B clearly shows the relationship between the high-bay plant spaces to the left and the three-story offices and shops to the right. Sections A-A and C-C express the elegance of the serried arrays of equipment with their connecting pipes and raceways.

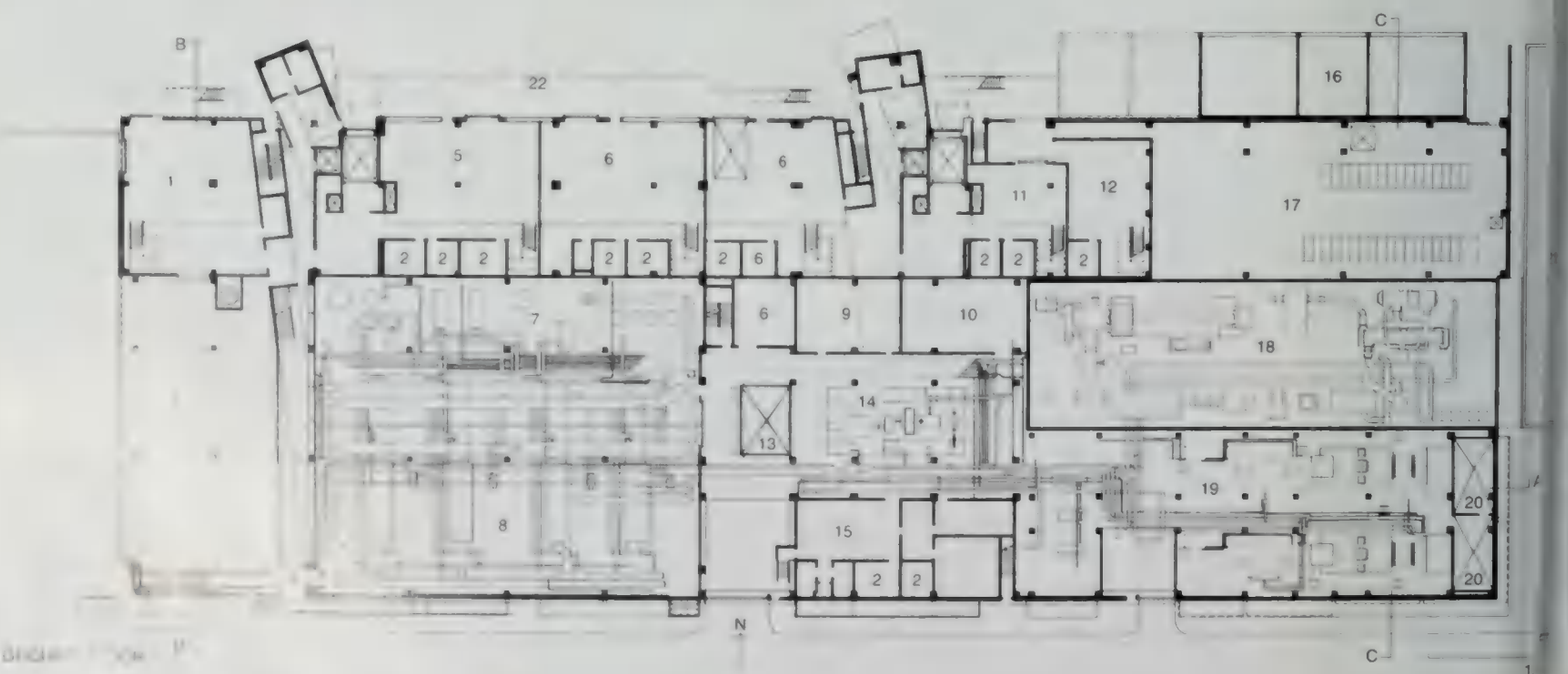
Of the $180 million invested in the project, $138 million went for construction, the balance for equipment. An economical braced steel-frame structural system meets seismic design requirements and structurally separates dissimilar building functions. Augured cast piles were used in place of driven piles to reduce noise and vibration during construction in this residential student neighborhood. Incorporated in the floor plan (below) is an independent emergency services building(18).

In co-generation, fuel goes to a combustion turbine generator to generate electricity. Waste heat is harnessed to produce steam. Steam is used to heat the campus, run a centrifugal chiller which produces chilled water, and a steam generator which produces more electricity. At UCLA, this electricity is used to operate an absorption chiller, which yields more chilled water.

1. *Masonry shop*
2. *Office*
3. *Future shops*
4. *Entry*
5. *Procurement*
6. *Storage*
7. *Pumps*
8. *Absorption refrigeration units*
9. *Control room*
10. *Relay room*
11. *Staging/dayrm.*
12. *Pest control*
13. *Lift-out panel*
14. *Steam turbine generator*
15. *Maintenance*
16. *Transformers*
17. *Switchgear*
18. *Emergency services building*
19. *Combustion gas turbines*
20. *Air intake*
21. *Police station*
22. *Catwalks (above)*
23. *Conference*
24. *Cooling towers*
25. *Open office*
26. *Ammonia tank*
27. *Heat-recovery steam generators*
28. *Hardware shop*
29. *Plumbing shop*
30. *Electrical shop*
31. *Centrifugal chillers*
32. *Absorption chillers*
33. *Cable vault*



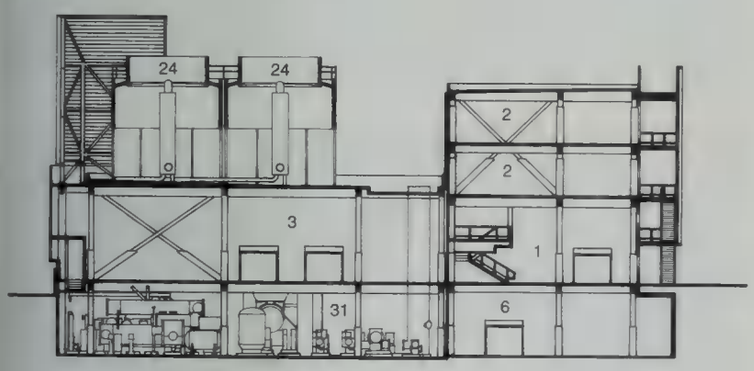
SECTION A-A



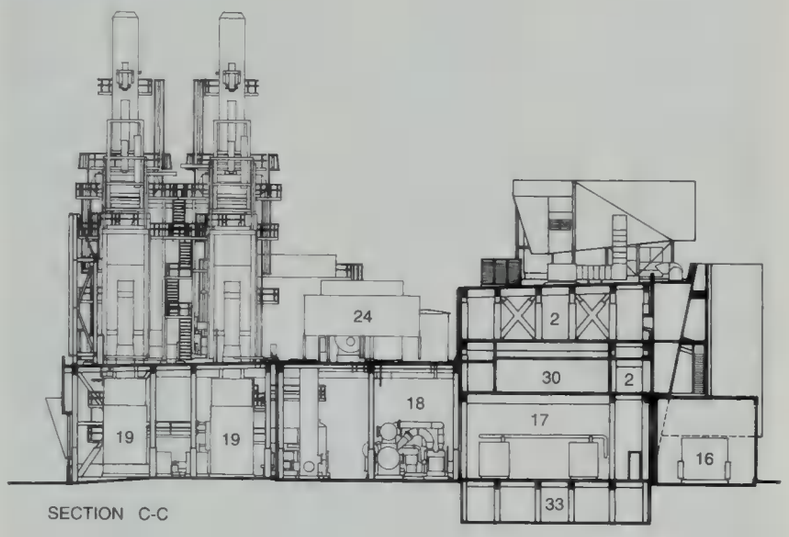
Up Close

Process was crucial. The delivery process began in 1981 in a spirit of alarm over an antiquated, inefficient, and air-polluting generation system. It ended this spring with on-line operation and occupancy by the facilities staff. An RFP was issued in 1987 for a limited design competition. The owner judged each of the five teams on the basis of their qualifications in: engineering, planning, architectural design, financial strength, proposed schedule, cost per delivered unit of chilled water, and quality of presentation. The Parsons Main/Kiewitt design-build team (Kiewitt was the general contractor) won, it believes, in part because 700 of the 1100 judging points were in one way or another impacted by architectural considerations. The team actually came out ahead by over 200 points in the "architectural design" category, ensuring victory by a slim 11 points. The program called for UCLA's facilities group offices to face the road on the south, with the chiller and power plants facing north. In its proposal, which required complete schematics, the Parsons Main/Kiewitt team took the bold step of switching the two, arguing that the plants would do less to tie up traffic if placed on the south side, whereas the facilities staff needed a work yard on the more isolated north. Contracts were signed in 1991. Installation was what one team member calls a "logistical nightmare." Facilities staffs, who occupied some existing buildings on the site, had to keep operating during construction, so an adjacent building was renovated before demolition began. Some units, such as the 5300-ton centrifugal chiller and the steam condenser, were so big they had to be installed in the basement before all the structure was in place. Masses of curving raceways (see cover) were carefully threaded among the columns using slings. Kiewitt builds mostly industrial plants that require close tolerances. UCLA benefited. Says UCLA representative John Krogstedt, "We look at a building that for us displays some of the best detailing that we've seen on campus, and some of the best workmanship."

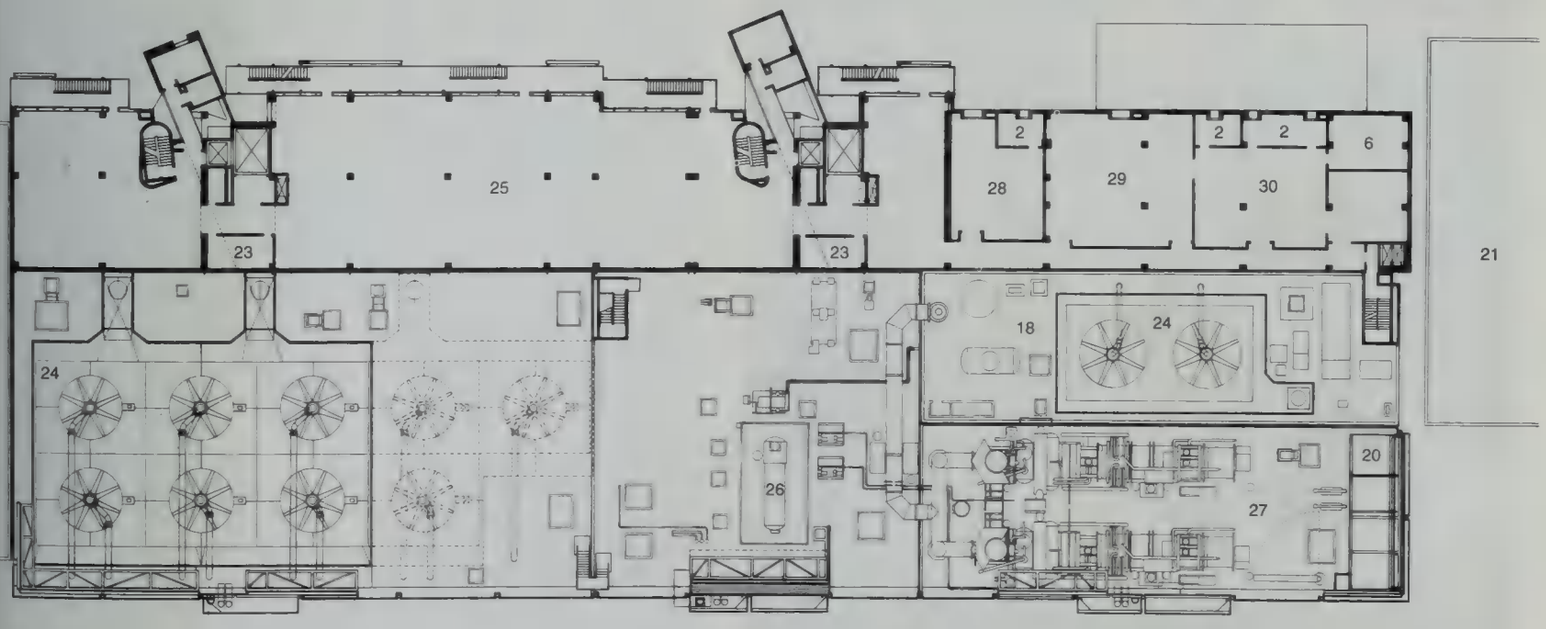
The architectural consultants' own role was crucial not only during selection but also in advising the team in such areas as developing code-compliant design alternatives, consulting on building location, orientation, massing and expression, championing the goals of campus architect Charles "Duke" Oakley as against the UCLA facilities group's traditional cost-driven engineering goals, and above all successfully challenging the team's engineers to accept creative approaches to the final design.



SECTION B-B

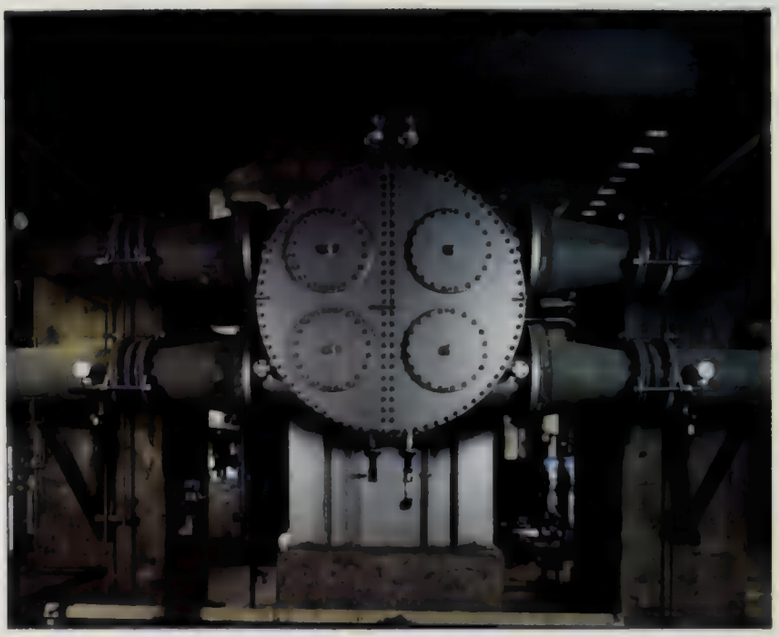


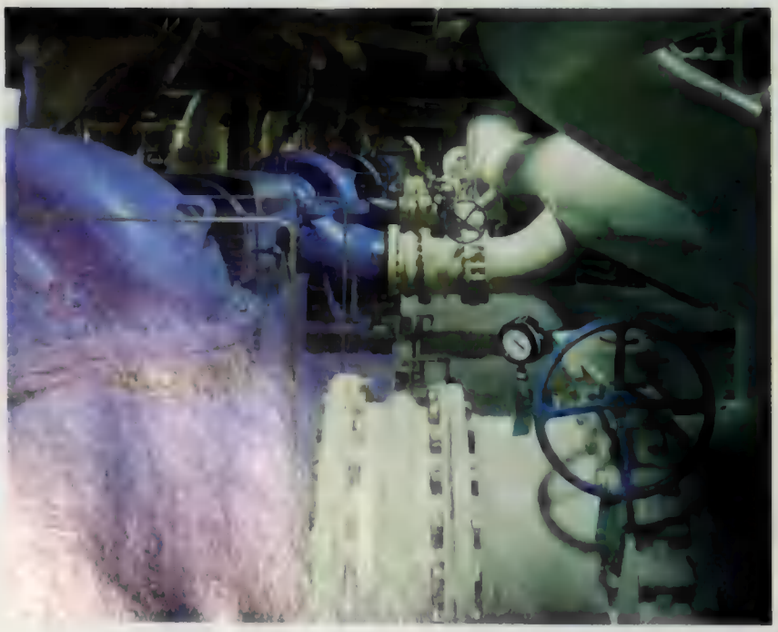
SECTION C-C



SECOND FLOOR







The assemblage of equipment shown on these pages gives a clue to the plant's powerful formal vocabulary. It includes two gas-fired turbines (left), one steam turbine (a steam-turbine condenser is center left), centrifugal and absorption chillers , pumps (a cooling water pump is shown below left), water demineralization units, and electrical-distribution systems (an electrical cable room is shown opposite top right and on the cover).

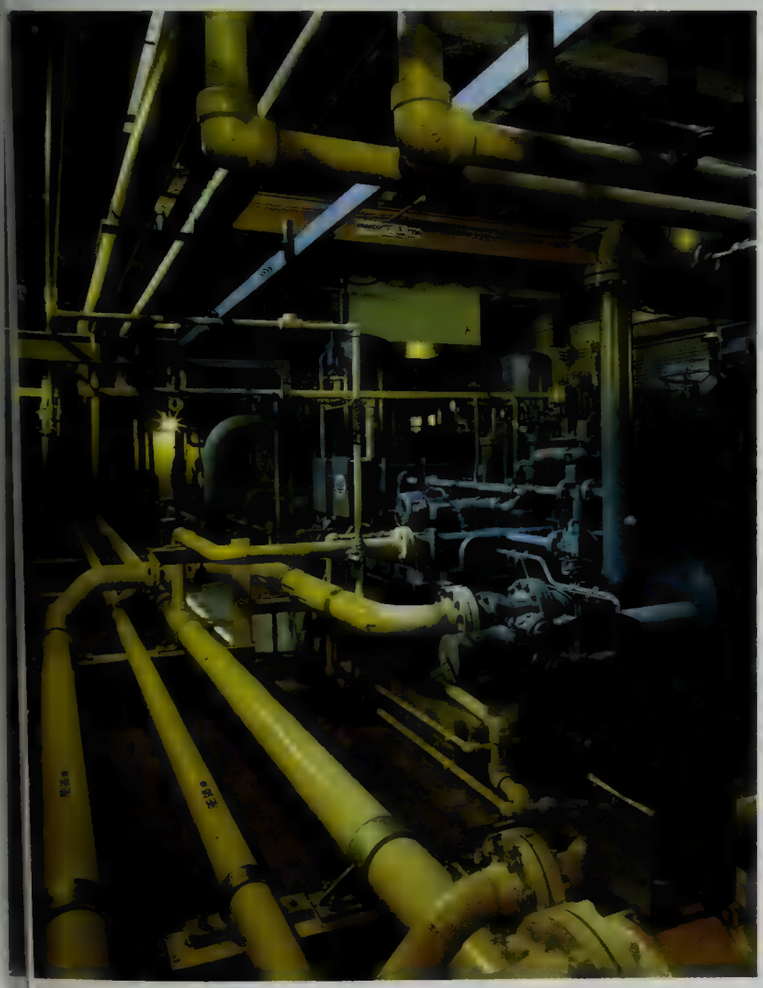
Fuel gas compressors are shown opposite bottom left, and the thick white plastic-covered pipes (bottom right) are chilled water-distribution lines. The entrance lobby atrium is shown opposite top left.

Credits

UCLA Energy Services Facility
Los Angeles, California
Owner: *University of California, Los Angeles*
Architects and Engineers: *Parsons Main, Inc.— Roy E. Gaunt, vice president; Vern Bakker, project manager; Les Wiedemann, project engineer; Mark Griffith, project architect*
Architectural Design Consultants: *Holt Hinshaw Pfau Jones Architecture—Paul Holt and Marc Hinshaw, principals-in-charge; Wes Jones, design principal; Dwight Ashdown, project manager; Scott Laidlaw, project architect; Robert Yue, job captain*
Consultants: *Engineering Sciences, Inc. (environmental); Harding Lawson Associates (geo-technical)*
General Contractor: *Kiewit Pacific Co.—Ed Gowdy, project manager*




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Take the High Road

The design challenge was as formidable as the terrain was rugged, the setting dramatic, and the public opposition vocal: create a 12.5-mile highway through Glenwood Canyon that would complement the natural beauty of Colorado's Rocky Mountains. The last link in a road running from coast to coast, the Glenwood Canyon segment of Interstate 70 benefited from its status as a high-profile, big-budget project that was permitted to break with many of the standard formulas of highway construction. The result is a road that has won acclaim from civil engineers, environmentalists, and the general public.

While the usual array of engineers and highway officials were involved in the Glenwood Canyon project, architects played a critical role in making it something special. The first thing they did was attack it. From the early 1960s when the highway authorities began planning a high-traffic replacement for the dangerous two-lane road built through the canyon in the 1930s, architects fought the project tooth-and-nail. Leading the crusade was Sam Caudill, a principal in the Aspen firm of Caudill Gustafson & Associates, who portrayed the highway as an unsightly intrusion that would wreak all kinds of environmental damage and destroy the unique nature of the canyon. As attitudes toward the environment changed over the years, state and federal highway officials tossed out the old plans and rethought I-70.

In 1976 Colorado's governor appointed a Citizens Advisory Committee and named Caudill chairman. That same year the Federal Highway Administration agreed to treat Glenwood Canyon and I-93 in New Hampshire as model projects with extra funding and special care taken for design. When two program-management consultants were hired that year for Glenwood Canyon—Gruen Associates for the east half of the project and Daniel, Mann, Johnson & Mendenhall (DMJM) for the west portion—a major factor in their selection was their design expertise. In fact, each firm brought along a lead designer who was both an architect and an engineer: Edgardo Contini, a vice president of Gruen, and Joseph Passonneau on contract with DMJM. Although involved in most of the design process, Contini died before construction was completed.

Enhancing the effectiveness of the architects was a district engineer for Colorado's Department of Transportation (CDOT), Richard Prosence, who believed in the importance of ecologically sensitive design





© Herman Guenther photos.



Architects played a big role in creating a new highway that would enhance, rather than destroy, the natural beauty of a rugged canyon in the Colorado Rockies.

and was tough enough to fight for it at every turn. "Dick Prosence was one of the real heroes of this project," states Passonneau, who adds that Prosence's willingness to fight for design won him the trust of the architects but did not endear him to his colleagues at CDOT.

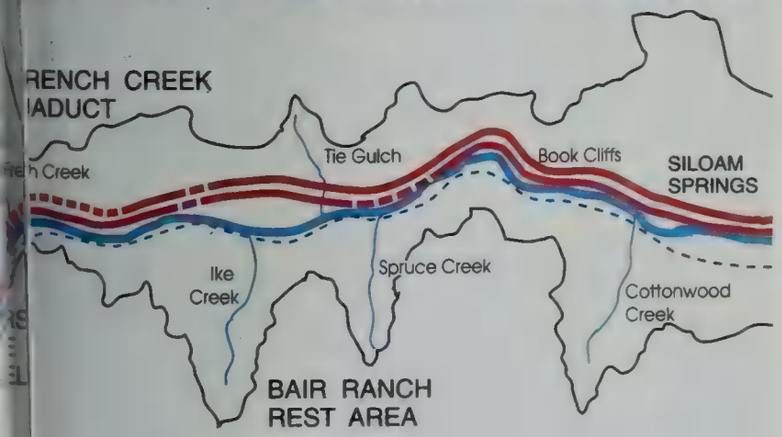
Splitting the project into two jobs made sense, since the canyon's geology changes radically at its middle point, just below scenic Hanging Lake. The east portion is wide and U-shaped, with unconsolidated clay layers forming the key geological features, while the west is a narrow V-shaped canyon with ankle-shaped slopes called talus runs. The two groups of architects worked together to design a set of common elements—such as bridge piers, road profile, safety barriers, and railings. They also agreed on an overall design approach, explains Passonneau, that incorporated the following beliefs:

- Keep the road out of the bottom of the canyon. "The priceless part of the natural setting is at the bottom, where the river and the fish are," says Passonneau.
- Get the fit between road and landscape right. "The notion of a pretty road is crazy," says Passonneau. "It's the fit, the transition, between the manmade and the natural that's important. The bigger the road and the faster the traffic, the more important the edge is."
- Minimize the amount of pavement.
- Separate the highway into two roads of two lanes each to minimize the amount of cut-and-fill necessary for construction and reduce the visual impact of the road on the landscape. By terracing the highway into two levels—with the eastbound road farther down the slope and the westbound section farther up—the designers let each portion respond individually to changes in the terrain and other site conditions. A bike path runs the entire length of the road and is placed on a third level, closest to the river.

Differences in the nature of the terrain in each half of the canyon caused the designers to vary the approach in their respective portions of the project. In the east, Contini designed a series of long viaducts that raised the road above the ground, thereby reducing the disturbance of natural land forms. Many parts of these viaducts were constructed using a special gantry that put precast-concrete sections into place from above. "The road looks like it's been airlifted into place," exclaims Hermann Guenther, a project manager for DMJM. "It seems to float above the landscape." Another major decision made







About 150 miles west of Denver, the Glenwood Canyon project runs 12.5 miles through a 2,000-foot deep gorge (map left). The westbound roadway rests on viaducts and bridges, while the eastbound road follows much the same route as the old two-lane highway closer to the river (photos opposite). To prevent traffic from disturbing recreation at Hanging Lake, the road runs through two 4,000-foot-long tunnels (above left). A six-foot-wide pavement overhang and single piers reduce the visual mass of the highway (above).

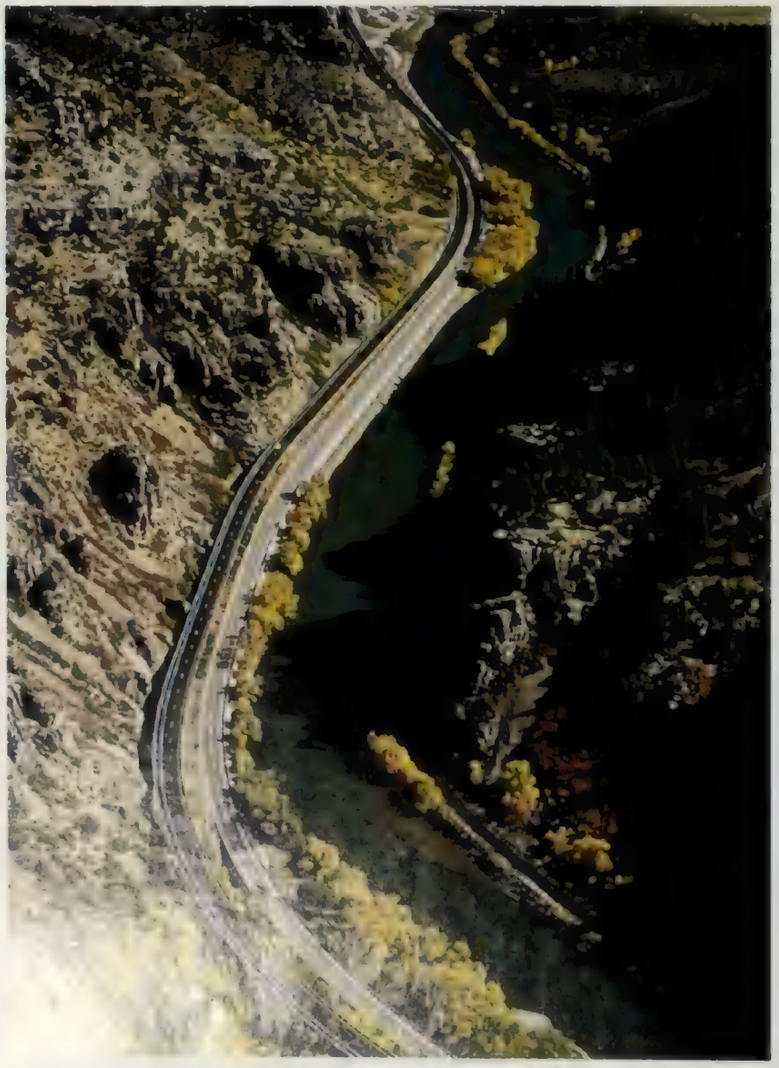
"I always thought of the canyon as a series or sequence of outdoor rooms, each with its own character and design," says Passonneau.

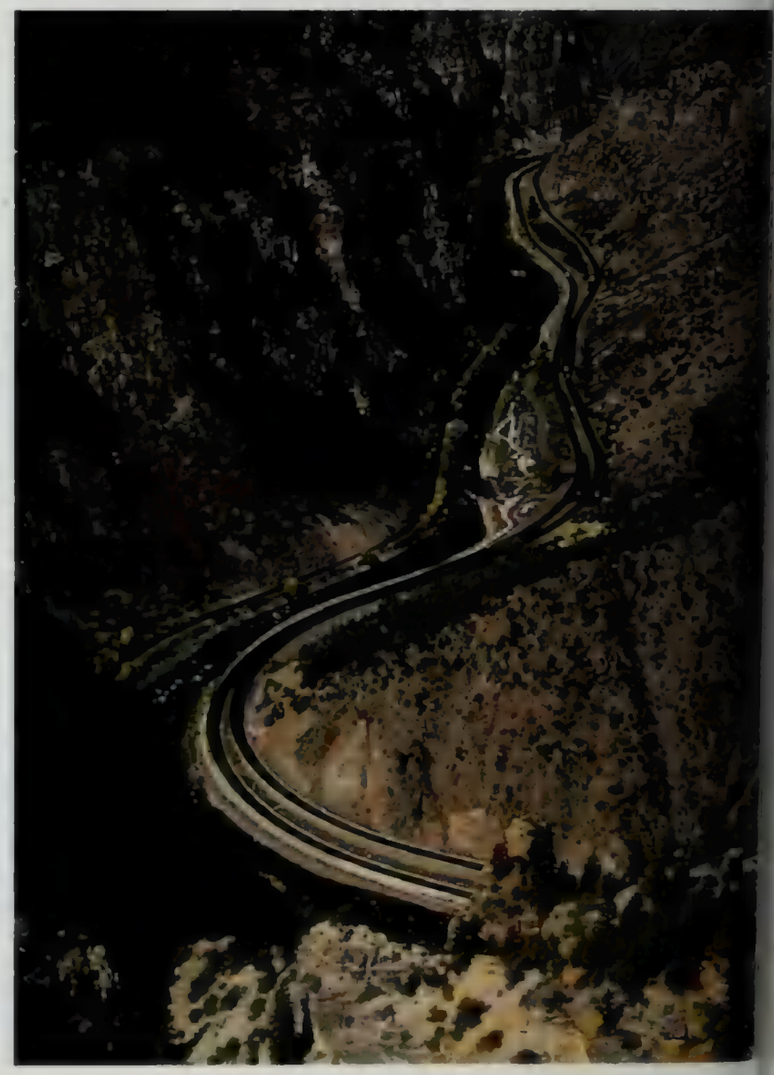
by Contini was to bury the highway in tunnels below Hanging Lake, a part of the canyon cherished for its recreational value.

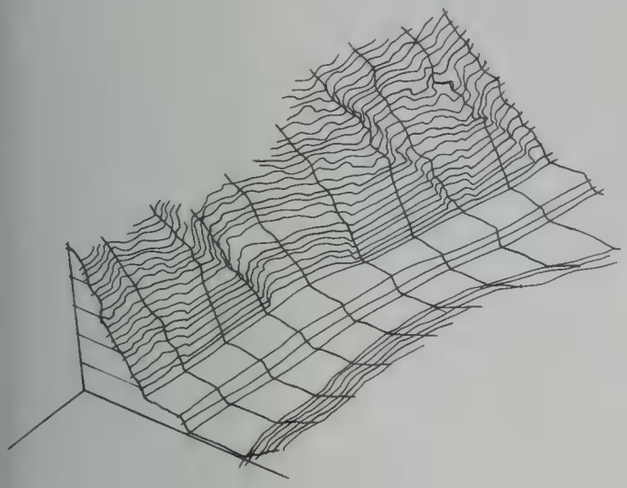
Because the canyon becomes much narrower and the terrain changes more rapidly in the western portion of the project, long viaducts were not practical there. Instead Passonneau and his team pushed the westbound roadway as far up the canyon wall as possible and used many short bridges to span ravines, valleys, and delicate land forms. To make the road fit as neatly as possible into the landscape, the architects fine-tuned its placement late in the design phase, often moving it a few feet here or there.

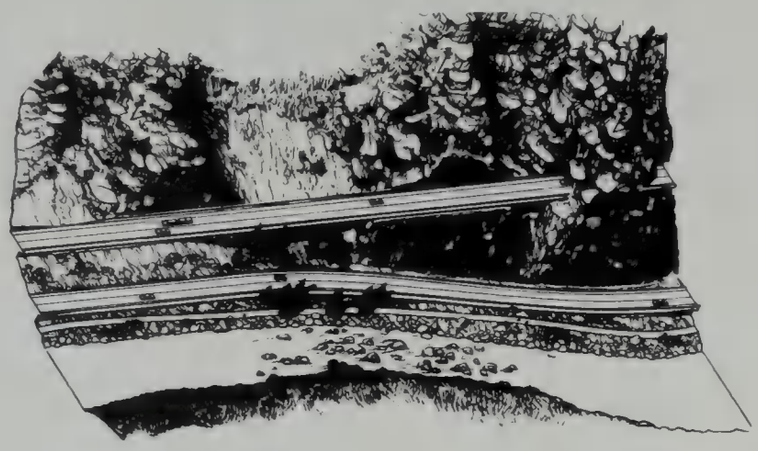
While Contini tended to use models during the design phase of his section of the canyon, Passonneau relied heavily on several different kinds of drawings to help him analyze design alternatives and communicate these to other people. The most important of these were isometric drawings that combine the realism of architectural perspective sketches in depicting background features with the accuracy of engineering drawings in showing the highway design. Starting with a topographic "armature" drawn according to isometric convention (opposite, top left), the architects would sketch in the existing terrain and then show the proposed highway in its setting (opposite, top right). By inserting various highway designs into the base drawing, Passonneau and his team were able to properly examine alternative proposals, then share them with other project members and the general public. Other drawings that Passonneau used included "cartoons" explaining basic principles (opposite) and "murals" that combine sketches from nature, diagrams, plans, and sections. Like storyboards that filmmakers use to show a sequence of scenes, these murals tell stories about how the river's edge or some other feature would unfold as a motorist drove along the highway. "I always thought of the canyon as a series or sequence of outdoor rooms, each with its own character and design," explains Passonneau.

Recognizing the canyon as a unique recreational resource, the highway authorities included the bike path and four rest areas that service hikers and campers as much as they do motorists. The project also involved repairing environmental damage done in the past and planting 180,000 native plants and trees which had been given a head start on life in greenhouses. *Clifford A. Pearson*

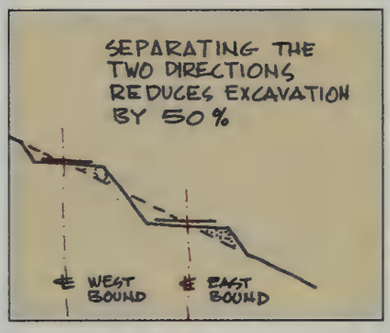


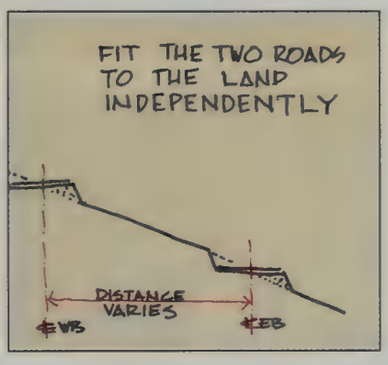


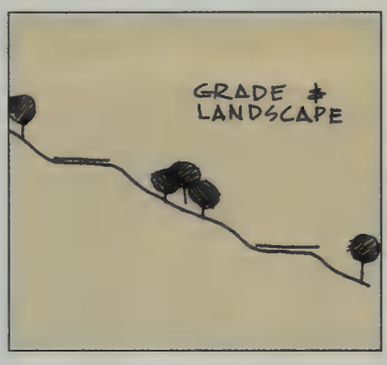














The French Creek Viaduct, made of more than 600 precast-concrete segments, runs through the U-shaped east portion of the canyon (opposite left). In the west half of the project, the canyon is much narrower and the highway must snake through difficult terrain (opposite right). The basic strategy in the western portion of the project was to slide the westbound roadway up the side of the canyon (left). To communicate their ideas , the architects used a variety of drawings, including "cartoons" showing basic design principles (above) and isometrics that start with a topographic armature and then are fleshed out to show the road in its canyon setting (top).

Credits
I-70 Glenwood Canyon
Western Colorado
Owner: *Colorado Department of Transportation*
Architect (west portion): *Daniel, Mann, Johnson & Mendenhall—Joseph Passonneau, principal designer; Gilbert L. Butler, John L. Haley, principals-in-charge of program management; Hermann Guenther, project manager*
Architect (east portion): *Gruen Associates—Edgardo Contini, principal designer*
Consultants: *DeLeuw, Cather & Company (common-element design standards); Parsons Brinckerhoff (tunnel design); Woodward-Clyde (structural design of tunnels)*

Form Follows Flight





Like other classic terminals, railroad and airline alike, the new International Terminal at O'Hare evokes wanderlust.

New International Terminal
Chicago O'Hare International Airport
Chicago, Illinois
Perkins & Will, Architects and Engineers
Heard & Associates, Ltd. Architects





Hedrich Blessing photos





he desire to capture the adventure of travel has repeatedly inspired architects to design some of their most memorable buildings. Eero Saarinen's Trans World Airlines Terminal at Kennedy International Airport, which interpreted the fluid motion of flight in graceful concrete forms, and McKim, Mead and White's Pennsylvania Station in New York City, with its soaring waiting room, glass roof, and exposed lightweight structural system are favorite examples. Ironically, at O'Hare International's youngest terminals, Murphy/Jahn's United Airlines Terminal and Perkins & Wills' new International Terminal, it s not a vaulted concrete airport that is used to evoke wanderlust, but ather monumental daylit rooms framed in lightweight, exposed steel n many ways more reminiscent of Penn Station. Travelers who never et foot in that station nor any of the huge glass train sheds of urope instinctively seem to compare these airport terminals to the reat stations of the steam age.

alph Johnson, design principal for Perkins & Will on the Internaional Terminal, disavows the notion that his building is inspired by hese sources, or its arching structure by less elegantly proportioned uonset-style airplane hangars. "Although I've always admired airlane hangars, I think the whole study revolved around the building's rofiles rather than trying to consciously create an image that refers any particular building type. Subconsciously, however, all rchitects study history. There's this whole catalog of things that ome out in your designs, regardless of whether you want them to. he more creative architects are the ones who use them in the most nique way."

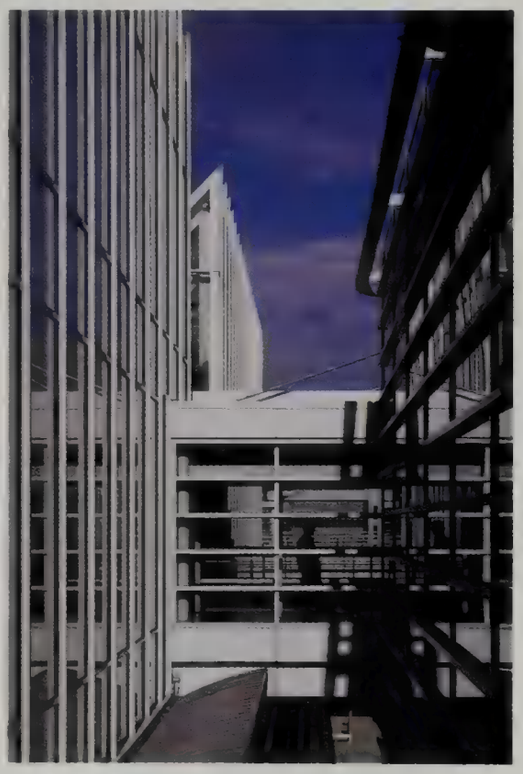
Even though international terminals are very linear—there is no ack-and-forth exchange between concourses as there is in domestic rminals—this is a building that had to be conceived in section—a eries of spaces of varying heights arranged along the axis of differt circulation activities that occur as part of the sequence of eparting or arriving. One begins to read this on the outside of the ilding. Though we didn't have much flexibility in siting the building ecause the master plan had already determined the location and elevation of the runways, people-movers, roads, and parking, we did cognize there was an opportunity to create the proper gateway age in the profile of the 800-foot-long ticketing pavilion. We studied rious shapes, and decided we should really take advantage of this rticular profile, because it can be seen from such a great distance."

side, the roof structure of the ticketing pavilion soars in the dayht. "The pavilion piece is low at the ends and high in the middle, ggesting the movement of the circulation. After ticketing, everye goes to the middle, where the roof is highest, says Johnson." The of of the galleria starts out low where it meets the ticketing pavil-, climbing as travelers approach departure security, where it is chored at its highest point by the ramp-control tower.

e need for daylight in the arrival spaces—a sterile corridor (soled because incoming passengers are not allowed any contact with n-passengers before going through customs and immigration), sports and customs, baggage claim, and the arrivals hall—also uenced the final form of the building. "One thing that worked to advantage," says Johnson, "was that these are single-loaded conrses, so we were able to have light even at these lower arrival ridors. At the arrivals hall, we were able to provide borrowed t through the people-mover stations, and skylights over immigra-/customs and baggage claim. There are very few terminals with d arrival spaces, because they always tend to be underground. "

rles Linn





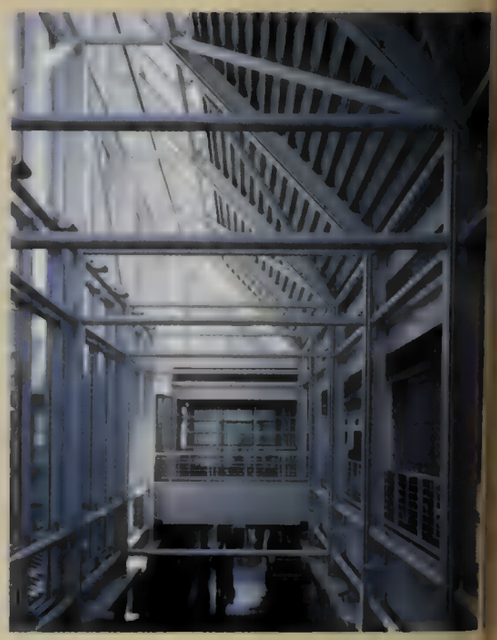
The ramp-control tower (top, above) serves in Ralph Johnson's words, as "the structural fulcrum piece for the whole composition; the whole concourse and galleria piece is focused on the tower." Round skylights over the customs hall can be seen below the tower. Bridges connect the ticketing pavilion with ground transportation (bottom).

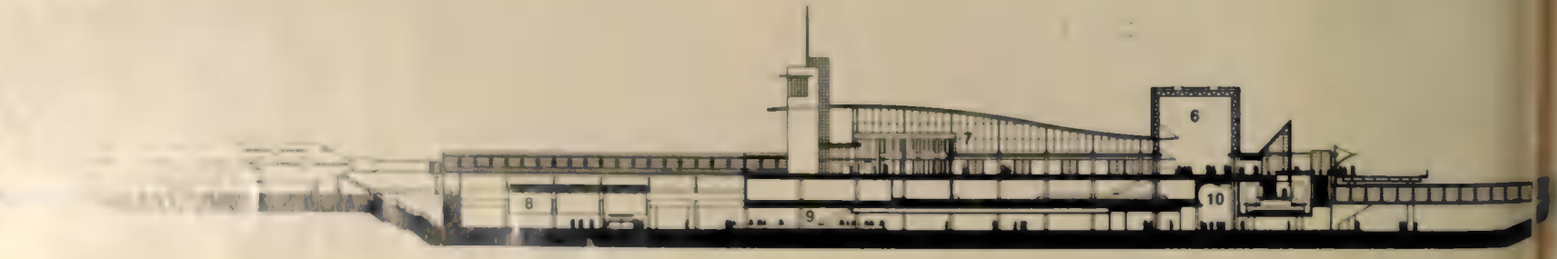


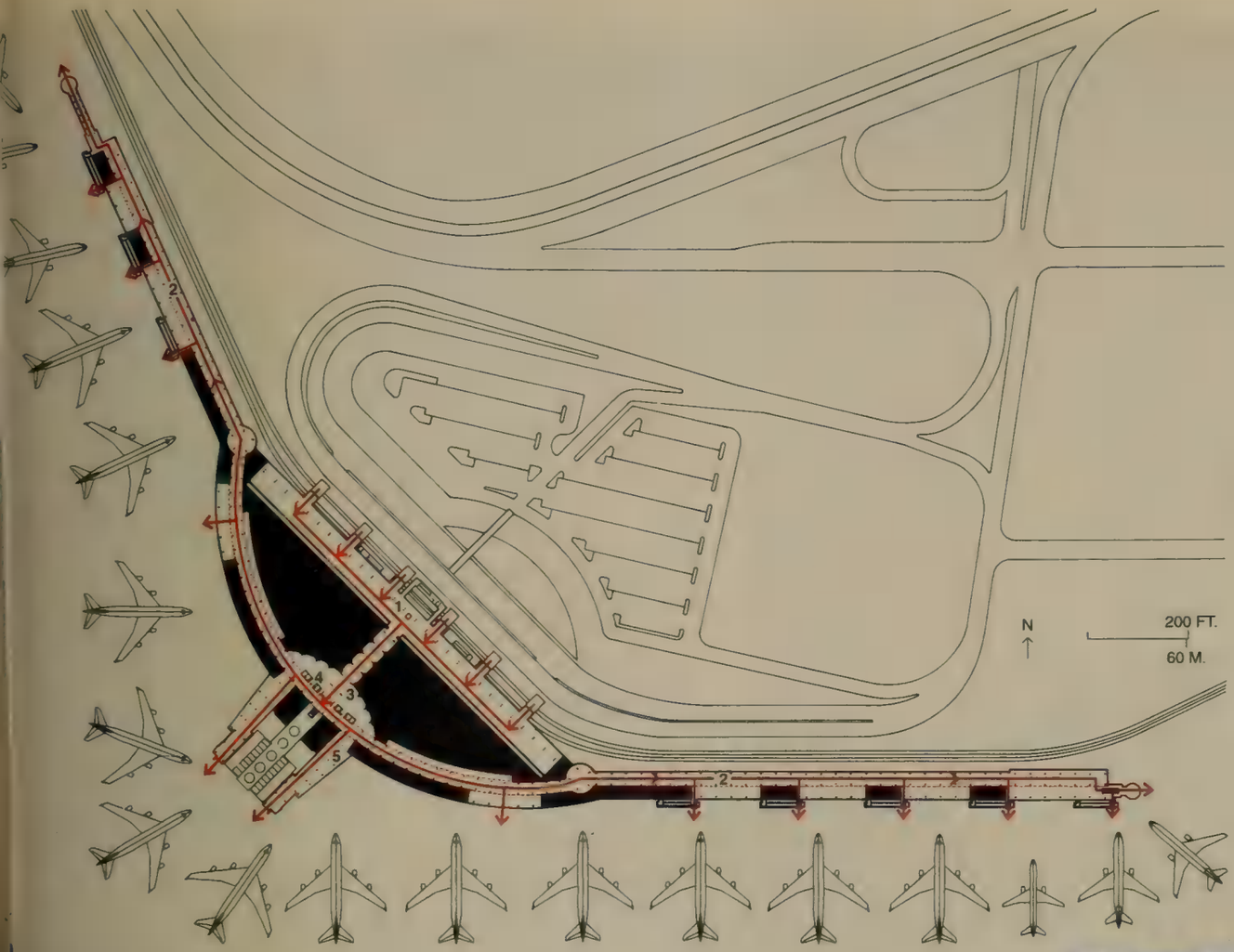
1. *International terminal*
2. *American Airlines terminal*
3. *Shared-use terminal*
4. *United Airlines terminal*
5. *People mover*
6. *Ticketing pavilion*
7. *Galleria*
8. *Passport/ customs*
9. *Baggage claim*
10. *Arrivals hall*

Up Close

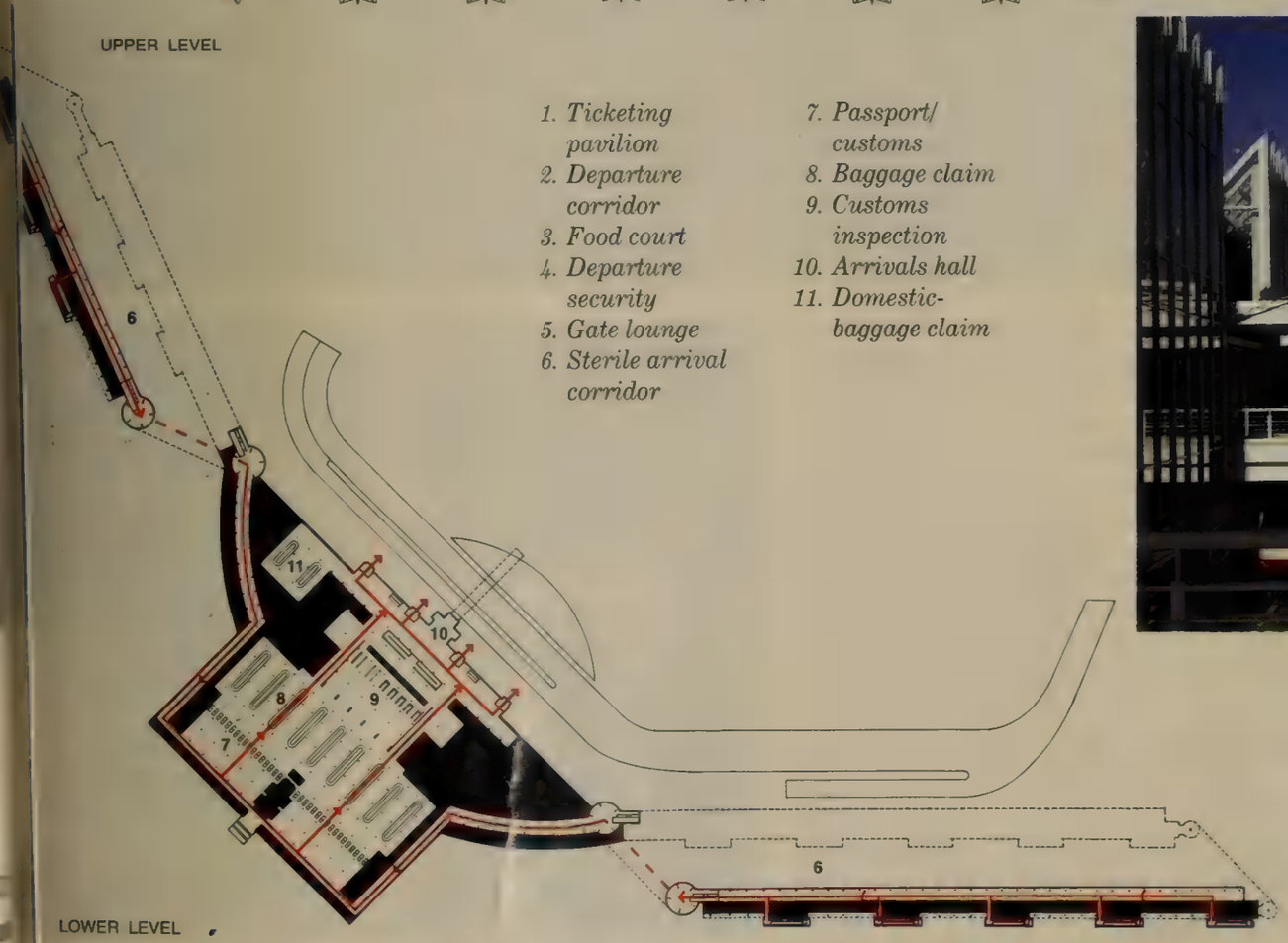
Circulation and security. The master plan of the O'Hare International Airport predetermined the locations of the circulation systems serving the new International Terminal at O'Hare, as well as the terminal itself (site plan left). Pedestrian bridges (below) connect the interior of the terminal with vehicular and people-mover systems outside. Inside (see plans opposite), unlike domestic terminals, the circulation of arriving and departing passengers is kept completely isolated: their movement is in opposite directions, and therefore on different levels. The need to provide security and prevent the transfer of contraband through airports has definitely influenced the layout of circulation patterns. For example, Johnson tried originally to have more than a single connecting point between ticketing and the departure corridor, but that was ruled out. So was a "fishbowl" space that would allow arriving passengers coming through customs to be observed from above while claiming baggage. "You can't do that anymore—smugglers use hand signals," says Johnson. "The Federal Inspection Service has tightened up its regulations because of concerns over drugs and terrorism. Even the arrival corridor is completely sterile—passengers can't have any contact with outside until they've been through customs."





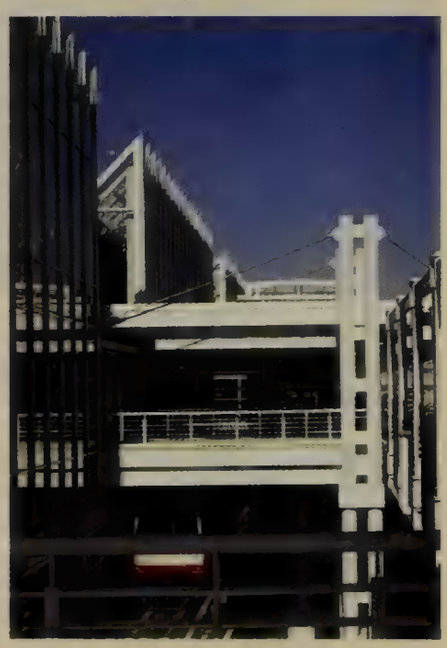


UPPER LEVEL



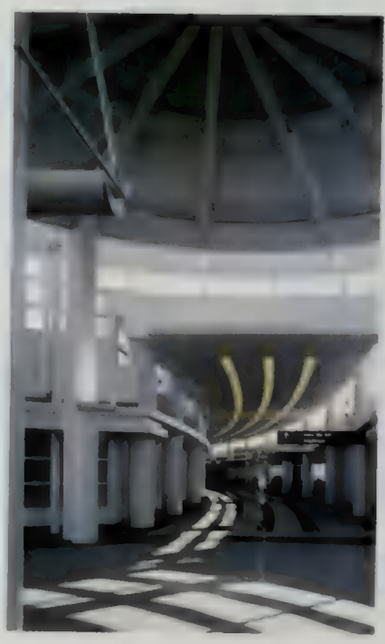
LOWER LEVEL

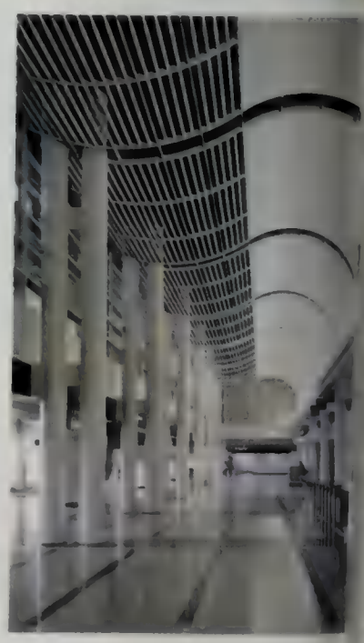
1. *Ticketing pavilion*
2. *Departure corridor*
3. *Food court*
4. *Departure security*
5. *Gate lounge*
6. *Sterile arrival corridor*
7. *Passport/ customs*
8. *Baggage claim*
9. *Customs inspection*
10. *Arrivals hall*
11. *Domestic-baggage claim*



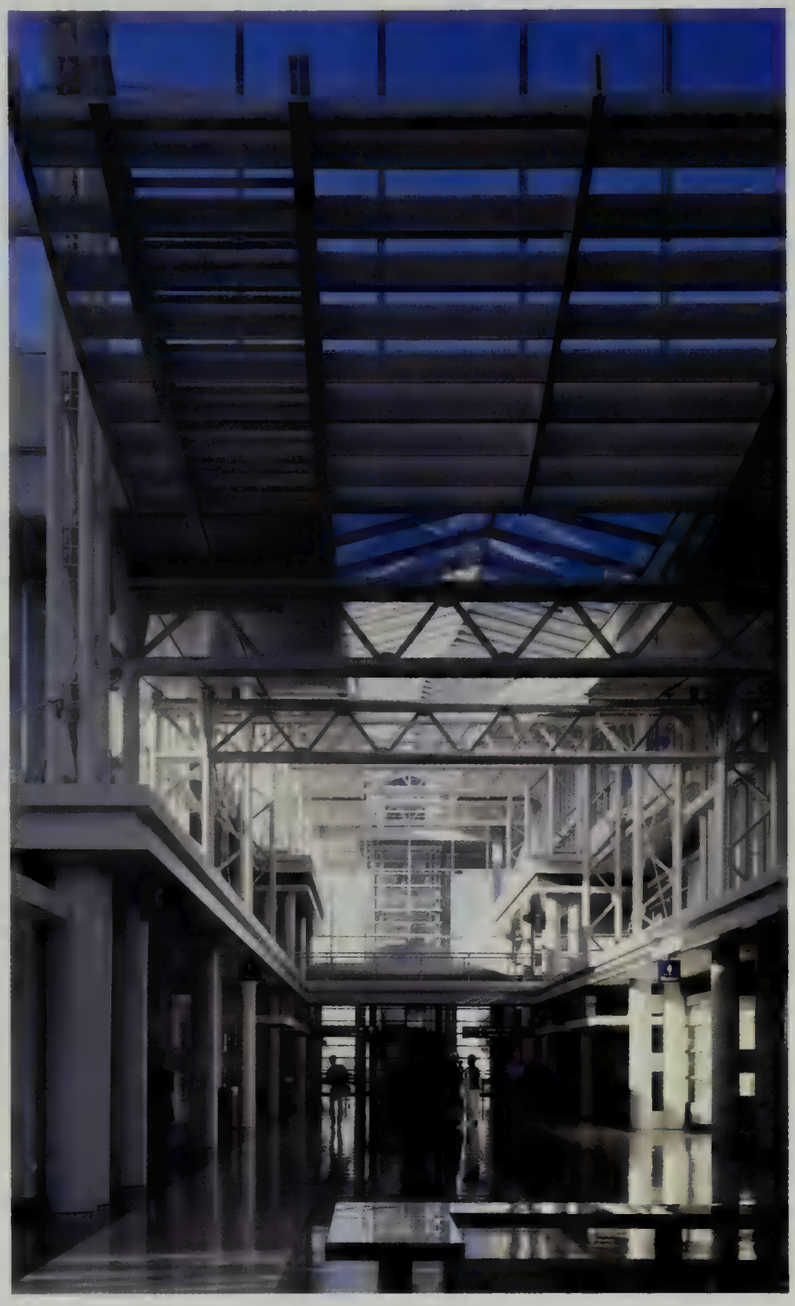


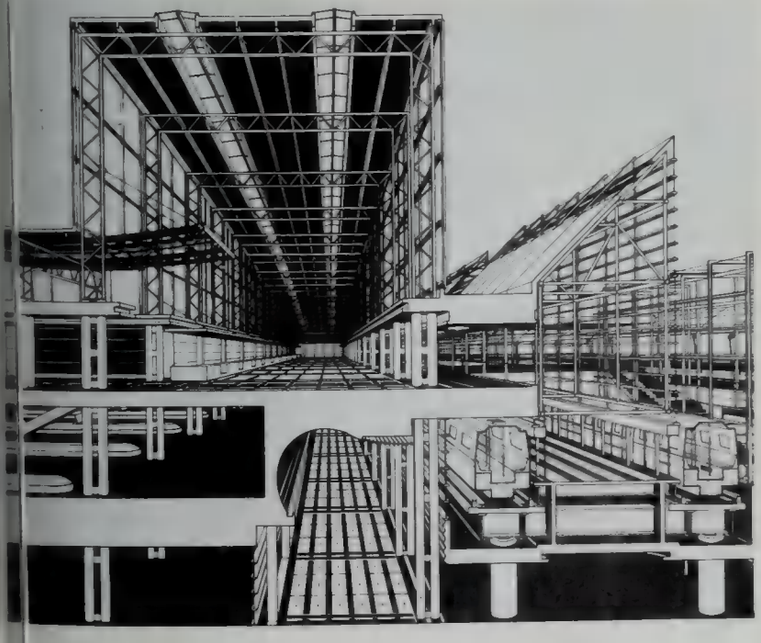
The monumental proportions of the International Terminal's soaring ticketing pavilion (above), concourses, and people-mover station (left and right bottom), and galleria (opposite), evoke the sense of adventure people associate with travel, although architect Ralph Johnson dismisses the idea he was inspired by any sort of transportation-building precedent. "I was thinking of it as a bridge-like structure, sitting in the canal of all the other infrastructure, like bridges of the freeway and all of the freeway [illegible] sort of industri[illegible]—something that had the scale of that kind of infrastructure work, the language of infrastructure." The section drawing (opposite) confirms Johnson's notion that the structure literally does act as a bridge between ground and air-transportation systems: the people-mover and ground-transportation systems are located to the right, and air transportation is located through the ticketing pavilion to the left.











Credits
International Terminal
Chicago O'Hare International Airport
Chicago, Illinois
Owner: *City of Chicago Department of Aviation*
Architects: *Perkins & Will Group—Ralph Johnson, design principal; James Stevenson, managing principal; James Economos, project manager; Heard & Associates, Ltd. (associate architects)*
Engineers: *Perkins & Will Group; Consoer, Townsend & Associates*
Consultants: *Avila & Associates (civil engineering and surveying); Carol Naughton & Associates (signage); Globetrotters Engineering (civil design); Restrepo Group (cost estimating); d'Escoto (mechanical/electrical/structural); I. Robinson and Associates (interiors); Wells Engineering (structural); Rolf Jensen & Associates (fire protection); Duignan-Woods (fire protection, plumbing); Thompson Consultants (programming, planning); Hanscomb Associates (cost estimating); David A. Mintz (lighting); R. Lawrence Kirkegaard (communication, acoustics) Black & Veatch (hydronics); Engineers International (soil/geotechnical)*

Focus on: Fitting Infrastructure

While designed for basically utilitarian purposes, all of the projects shown here demonstrate an unusual sensitivity to the end-user–the public that paid for them. For the architects, this was not always easy. For instance, Barton Phelps was in virgin territory when he produced the North Hollywood Pump Station. His engineer clients in the Los Angeles Department of Water and Power had, in recent years, used prefabricated structures until his assignment, when the city Cultural Affairs Commission stepped in. "Once water-pumping stations, which brought the miracle of life, used to be celebrations," recalls Phelps, as was the case with the small Spanish Revival station his new building would replace. "More recently, the only celebration

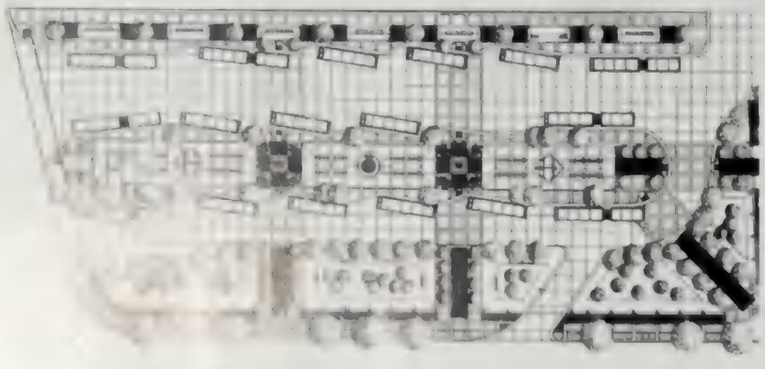
North Hollywood

Pump Station
Los Angeles, California
Delon Hampton Associates, Architects and Engineers
Barton Phelps & Associates, Associated Architects for Design



Ronstadt Transportation Center

Tucson, Arizona
C. W. Fentress J. H. Bradburn and Associates, Architects





you got was when you turned on the tap." Still, with the Cultural Affairs Commission's support, he was able to bring back the spirit of public amenity within the low budget that had once been allotted for unfriendly metal buildings out of catalogs. Architects C. W. Fentress J. H. Bradburn may have had more sympathetic clients for the Ronstadt Transportation Center in Tucson, but still the architects were taxed with having to bring a basically incompatible function–the heavy traffic of buses–into a delicate historic district. Their solution: screen off the buses with a neighborhood-friendly arcade. The biggest planning challenge may have been the one faced by architects Domenech Hicks & Krockmalnic at Dudley Station, Boston, when they unified a forbidding dark forest of elevated transit-line columns into a welcoming thoroughfare for Roxbury's business district, and reused several of the once-obstructing existing buildings on the site in the process. Gensler and Associates adapted the design language of surrounding boxy buildings in creating an open jet-age gateway at Jefferson County Airport. And HNTB made paying a toll almost a pleasure in the preserved sylvan precincts of Boulevard Bridge.





Welcoming waters

An elegantly inscribed concrete-paver plaque before the arched window explains that much of the water entering this station, which supplies central Los Angeles, comes via aqueduct from snow run-off in the Sierra Nevada Mountains some 340 miles away. Through this window, passersby see the three largest of 11 turbine pumps that can be run in reverse during off hours to generate electricity. These pumps account for almost 90 percent of the building's $22-million cost and the client Department of Water and Power was proud to show them off. Not so, the building's product, water. In fact, Barton Phelps had to submit four schemes, including ones using water as decorative elements, before he could definitively identify what the program parameters were. The final scheme is a massive poured-concrete box that shields much of the loud machine noise inside. The front is a billboard showing the ocean in blue tile and the coast in exposed concrete formed with finish plywood onto which lettering, joints, and topographic features were applied. "It was a serious casting job," says Phelps. *Charles K. Hoyt*





Transport mecca

Architects C. W. Fentress J. H. Bradburn took full advantage of Tucson's warm, sunny climate when they created this 18-berth central hub for the local bus system. Passenger-waiting areas are open to the outdoors and protected from sun and occasional rain by copper shed roofs supported by light steel trusses. The only enclosure is a shielding wall at the site perimeter, where the busy new facility faces two quiet streets of Tucson's historic district. Here, arcades built of old brick are covered by open-grid steel sunscreens. A monumental main terminal entrance, complete with traditional clock, pierces this wall at a corner facing the city's main pedestrian street, which leads to the downtown business district. Once inside, passengers are guided across scored-concrete bus ways by colored masonry pavers. Two 50-foot wind towers located between the central waiting areas provide natural cooling. Based on ancient Middle Eastern models, the towers' advanced functioning that cools with wet screens was developed at the University of Arizona Environmental Research Laboratory *C.K.H.*.

Dudley Station Rehabilitation

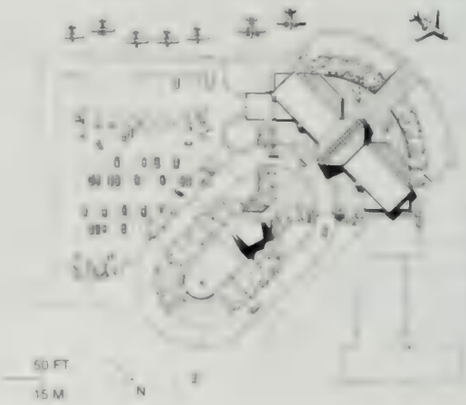
Boston, Massachusetts
Domenech Hicks & Krockmalnic Architects





Jefferson County Airport

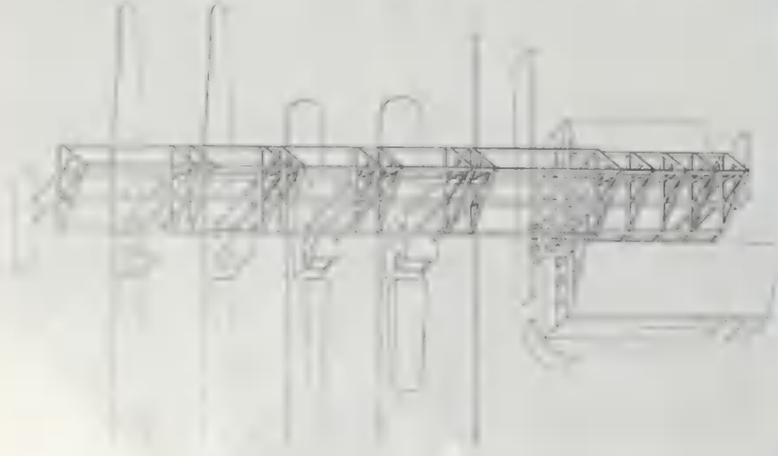
Bloomfield, Colorado
Gensler and Associates, Architects





Boulevard Bridge

Richmond, Virginia
HNTB, Architects, Engineers, Planners



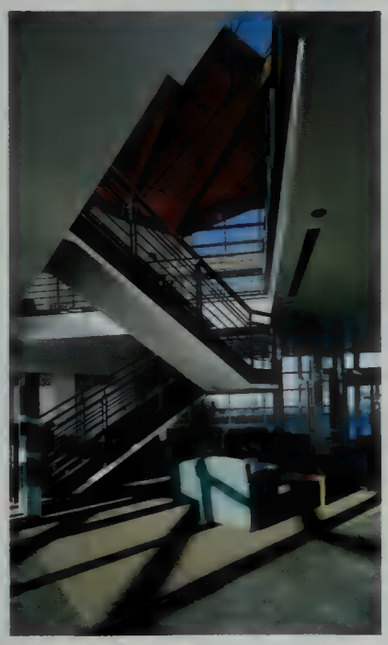




Transit update

Architect Albert Wadsworth Longfellow won his commission to design the Dudley Station on a former elevated commuter rail line in a competition in 1901. But by the 1950s, when part of the steel-frame copper-clad structure was demolished, both the station and its Roxbury neighborhood were falling on hard times. Blighted by abandoned elevated tracks, the dark site became an unfriendly gateway to a community served by buses. Charged by client Massachusetts Bay Transportation Authority to revitalize the area with a new welcoming and efficient bus hub that would unite rather than rend the surrounding blocks, architects Domenech Hicks & Krockmalnic demolished the elevated tracks and, with the help of engineers Fredric R. Harris, lowered the historic structure to the ground, locating it to serve buses on local routes. They replicated missing elements using copper-sided fiberglass, and added a whole new copper roof and enclosed heated waiting areas. An entirely new structure of a similar-but-simpler design (left in plan) accommodates buses routed to center city. *C.K.H.*





High-flying hospitality

This new 27,000 square-foot $2.5-million facility exemplifies a growing market for airport design: the private- and corporate-plane traveler. Conceived as a quick in-and-out central meeting place between Denver and Boulder, where one enjoys skyline views of both cities, the building has a second floor primarily devoted to meeting, dining, and entertainment rooms. Much of the first floor is occupied by pilot waiting areas, including a route-plotting desk, and space leased to private corporations. Amenities include a landscaped transition area between tarmac and building, and a central two-story skylit lobby, which bows to local construction tradition with exposed heavy-timber beams and wood roof decking. Project designer Roger Kish took other design cues from neighboring boxy brick buildings, says principal-in-charge Phillip McCurdy, and gave a jet-age twist by breaking out of the rectangular steel-frame envelope with glass and metal angled projections. Lightweight aluminum panels on these "wings" are laminated over a rigid backing to prevent oil-canning. *C.K.H.*



Natural passage

Unlike many communities that prefer to replace their bridges than care for them, Richmond commissioned architects, engineers, and planners HNTB to rehabilitate its 2,034-foot span, built over the James River in the early 1920s and approached through historic Byrd Park. The client also wanted a new toll facility in keeping with the site's scenic character. Part of the designers' challenge was to integrate an enormous 16 1/2-foot-high roof over the toll booths with a small 860-square-foot operations building while not overwhelming it. The solution is a unified roof over both facilities. Exposed wood trusses support a stained-cedar-shingle roof. Painted cedar clads the building, which holds toilets, a break area, lockers, and toll-counting rooms. The design passed the local planning board with flying colors, recalls HNTB project designer John Engelhardt. Not all is rustic however. The toll booths have metal siding. "If the wood structure is the barn," he explains, "the booths are the farm machines." The large booth nearest the operations center is fitted for disabled workers. *C.K.H.*

CHANGE IS GOOD.



Union Bank Square, Orange, California
Distributor: Elward, Inc., Lakewood, Colorado
Architect: Langdon Wilson Architecture Planning, Newport Beach, Cal

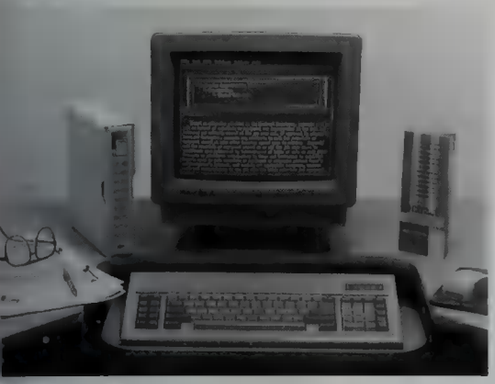
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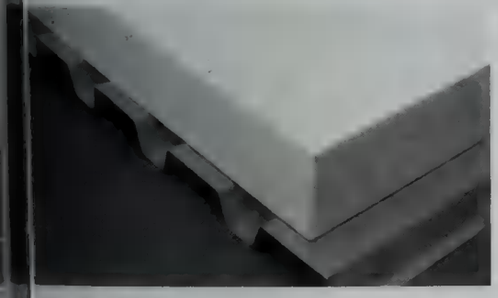
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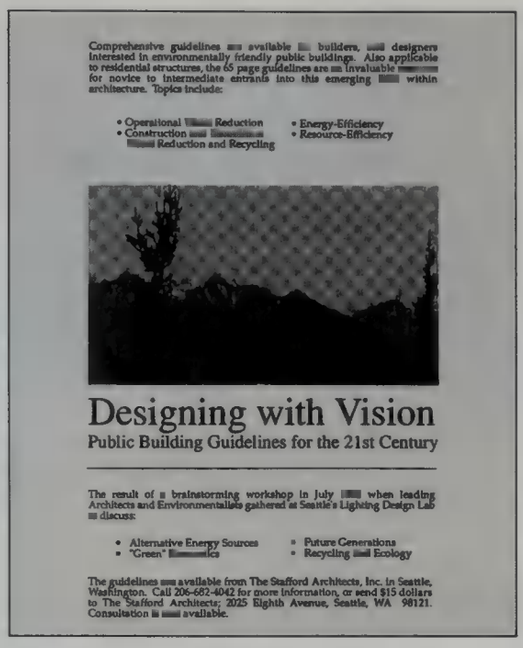
19. Database of construction clauses
he Contract Constructor, a document
ssembly program, allows users to amend
eprinted contracts or create them from
ratch, selecting from an "extensive" data-
se of alternate text provisions. A checklist
elps the architect vet the draft for omitted
formation; gives risk-allocation help for
ojects from homes to highways. 800/257-
37. Alpine Press, Inc., Boulder, Colo.



0. Spray-applied fireproofing
ze-Shield II is described as a dry-spray
duct capable of exceptional density, with
d and compressive strengths that make it
technical equivalent of comparable wet-
ay, cementitious materials. ASTM E119
s yield ratings of up to four hours for
r/ceiling, beam, bar-joist, and other con-
uctions. Sound absorbing and insulating.
atek International, Stanhope, N.J.



1. Direct-to-metal deck insulation
orm/Protect EPS board has a flame-
rdant coating that allows it to meet UL
standards for foam plastic in roof-deck
mblies without an additional thermal
ier. Can be used with any commercial
ng. AFM Corp., Excelsior, Minn.



322. Recycled building materials
The Harris Directory is a US/Canada database of over 1,500 recycled-content building materials. Listings are organized by CSI Division and Section, with each entry citing the recycled content, environmental benefits, results of recognized test protocols, and contact data for each manufacturer. Available on Excel 4.0 for Mac and DOS. Single edition $45; volume and multiple-site discounts; semi-annual updates planned. FAX: 206/447-1670. The Stafford Architects, Seattle.

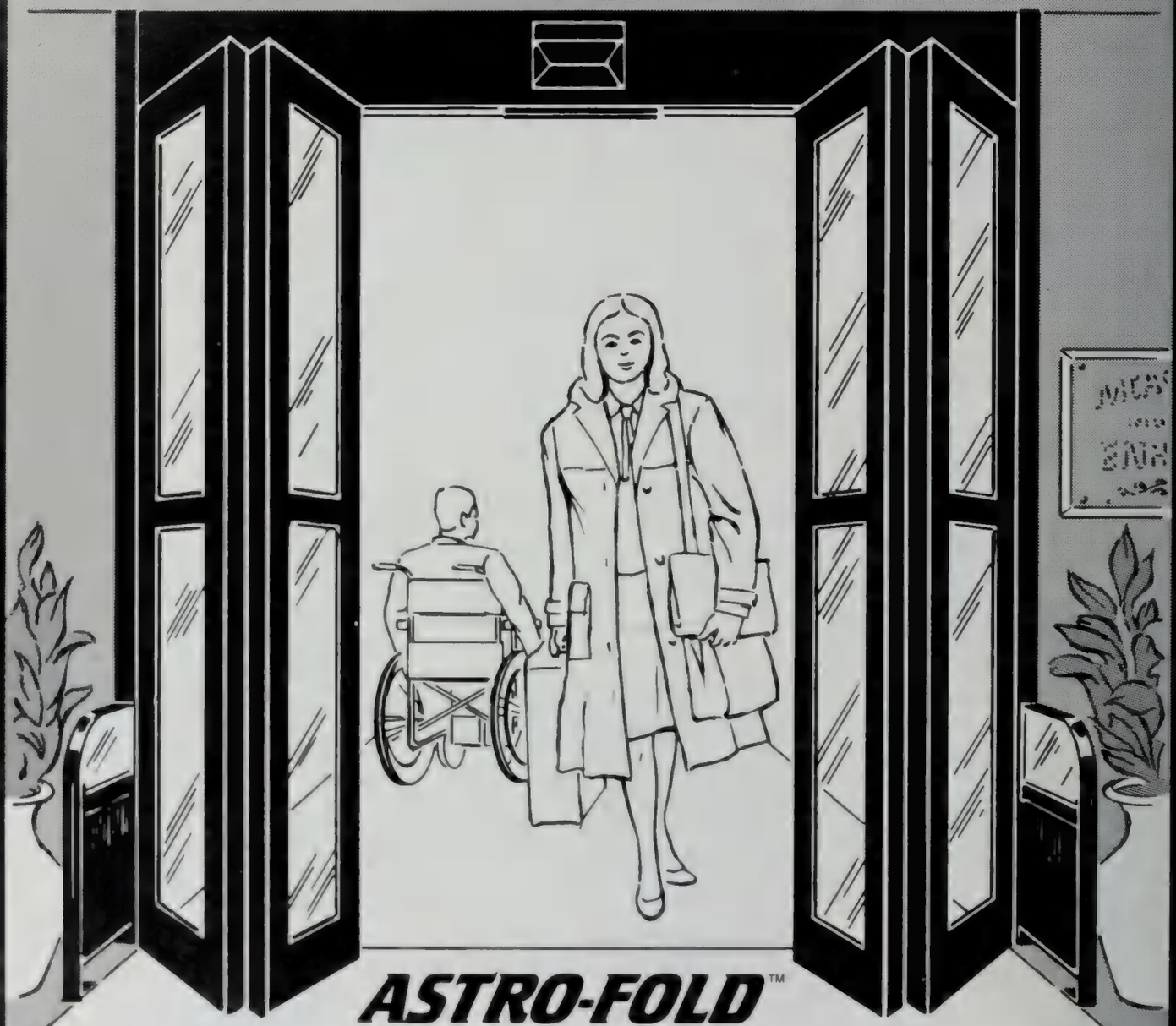


323. Tile-installation specs on disk
Technical specification software provides information on installing and maintaining ceramic tile and stone surfaces using Hydroment and CeramaSeal products. Sections describe applications on different surfaces, reference standards, quality assurance, delivery, and storage documentation. A section on execution details the preparation, installation, protection, and correct maintenance of various hard-surface floors. No charge. Bostik, Inc., Middleton, Mass.

Continued on page 133

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Architect: Michael Koch
Roofing Contractor: Snyder Sheet Metal
Custom Color: Custom Salmon
Profile: Snap-on Standing Seam Panel

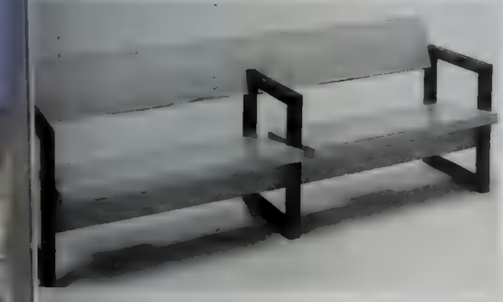




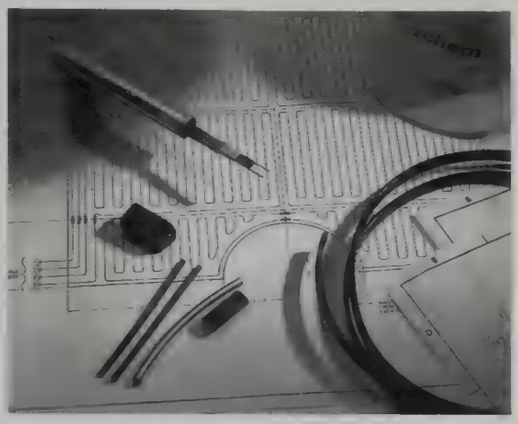
24. Limited-edition site furnishings
Maine furniture maker will alter standard signs or create new pieces to meet an chitect or landscape designer's specific site quirements. The arched-back chair shown one of seven specified for an Arkansas llege. Weatherend, Rockland, Maine.



25. Waterproof solid-phenolic lockers
ade in California with European flair, sign-Tec storage units of steam-cleanable spa phenolic feature rounded corners, umfered edges, and stainless-steel fittings. own: a space-saving "Z" style. W&W es, Ltd., Spring Valley, N.Y.



26. Rietveld originals
chased from the Hoeksteen (Corner- ne) Church in Uithoorn, Holland, when it converted to a public library in 1984, 85- ong pews of Parana pine and painted l were made to Gerrit Rietveld's designs ne early '60s. Priced about $12,000 each. 343-0441. Peter Blum. New York City.



327. Radiant-heat floor warming
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Continued on page 145

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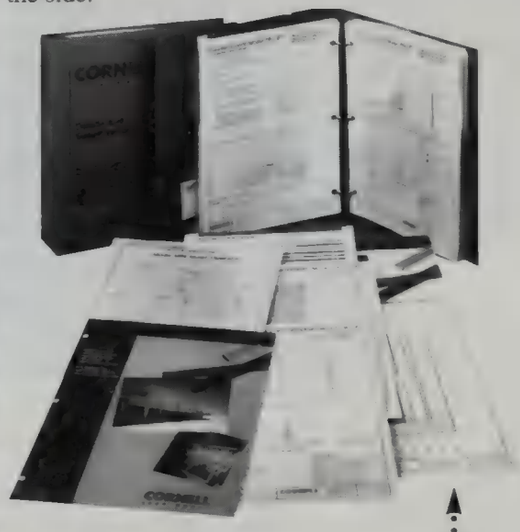
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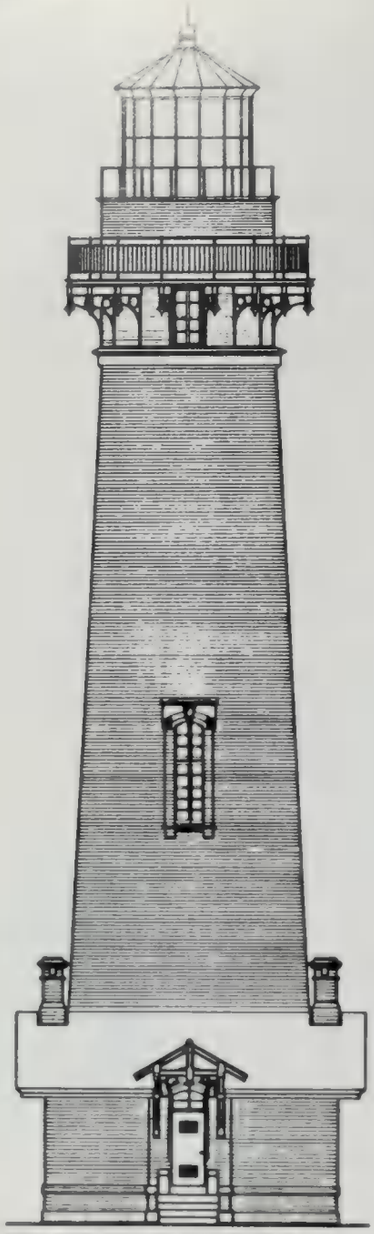
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Letters *continued from page 61*

peoples from a variety of cultures, America's aspirations and values, and thus its architectural expressions, are fundamentally European. Look around you. From government edifices to residential town homes it is clear America does not apologize for celebrating its European roots through its architecture. But America should also celebrate the traditions and architecture of the members of other cultural groups who rightly call themselves American, not just those of European decent.

Mr. Majekodunmi, however, seems to be saying: do not look to Africa to define your identity; don't deal with the non-European dimension of your past; do not attempt to restore the breadth and continuity of your history. The people who subjugated your ancestors have won; like it or not, learn to live with it.

I agree that we should not feel obligated to make all our buildings look African, but when some of us do it should be celebrated. Architecture is one of many venues where our historic and cultural discontinuity needs to be corrected. America needs more permanent visual manifestations of the culture of one of the peoples who helped make America great.
Paul L. Taylor, Jr., NOMA
University of Maryland at College Park
College Park, Md.

Fire Safety

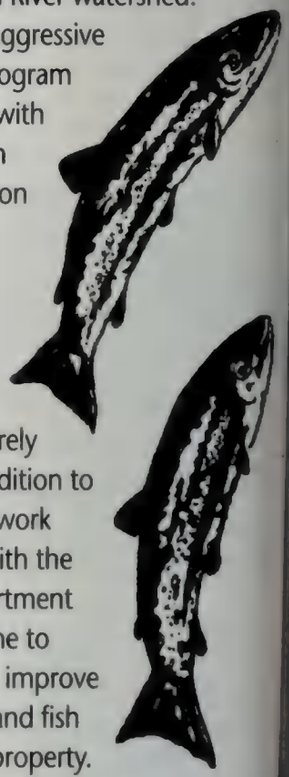
I am responding to an item published in the December 1993 edition of RECORD. In the *Technology News* section, the author discussed the issue of applying more restrictive fire safety requirements in areas that had been devastated by wildland fires. Referring to the 1991 Oakland/Berkeley Hills fire, he stated that low water pressure, such as occurred in that fire, is "one reason (that) enacting residential fire-sprinkler requirements generally hasn't happened."

I have heard a variety of reasons why people resist the concept of residential fire sprinkler systems, but the argument against residential sprinklers based on the potential of low water pressure in a firestorm situation does not, if you will, hold water. Was low water pressure a factor in the Oakland/Berkeley Hills fire? Certainly, and one of the factors was water service lines that ruptured as buildings after building incinerated in the face of the firestorm. You see, all of the buildings had domestic water lines, so the
Continued on page 141

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Letters *continued from page 134*

presence of a sprinkler system in any of them would not have been a factor.

It is very likely that everyone reading this has seen the same pictures of the Oakland fire's aftermath that I did. The pictures showed house after house leveled by the fire, but I didn't see any water lines hanging in the air, be they domestic or sprinkler.

The National Fire Protection Association confirms that three factors contributed to the loss of water. The first factor, was ruptured water service lines. The second factor was the loss of electrical power in the early stages of the fire, knocking out eight pumping stations and 10 residential reservoirs in the first half-hour of the fire.

The third was that the water system was designed for "normal" fire situations, not a fire of the magnitude encountered in 1991.

Residential sprinkler systems conserve both property and water in the "normal" fire situations noted above. Residential fire sprinklers are life safety systems for fires that ignite in the home. As such, they are designed to activate rapidly in time to prevent the loss of life. But the quick reaction time also saves much more property than is saved in unprotected homes (75 percent more), while also conserving water at the same time. To illustrate, fire department hose lines are 1 3/4 in.diameter and deliver about 160 gallons of water per minute. On the other hand, one residential sprinkler head delivers only 10-18 gallons per minute.In well over 90 percent of fires in protected homes, only one sprinkler head is enough to extinguish the fire. Thus a lot of water is conserved if a sprinkler system extinguishes a fire instead of the fire department.

Given the extremely good life-saving record of residential sprinkler systems and their record of conserving property and water, how can one argue against them because of a misguided notion that they will contribute to water loss in a firestorm?
Patrick J. Coughlin, Director
International Association of Fire Chiefs
Fairfax, Va.

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Manufacturer Sources

For your convenience in locating building materials and other products shown in this month's feature articles, record has asked the architects to identify the products specified.

Pages 98-103
27th Avenue Solid-Waste Management Facility
Phoenix, Arizona
Linnea Glatt and Michael Singer, Designers
Black & Veatch, Engineers
Glass block: Pittsburgh-Corning. Translucent panels: Kalwall Corp. Insulated CMU: Superlite Integra. Mechanically fastened roofing: Carlisle SynTec System. Windows, entrances, and sliding doors: Southwest Aluminum. Segmented doors: Pacific Rolling Door Co. Interior metal doors: Curries Corp. Locksets: Schlage Lock Co. Hinges: McKinney. Exit devices: Von Duprin. Ceiling suspension grid: Gordon. Seamless industrial flooring: Kalman.

Pages 104-111
UCLA Energy Services Facility
Parsons Main, Architects and Engineers
Holt Hinshaw Pfau Jones Architecture, Architectural Design Consultants
Built-up roofing: Manville Roofing Systems, Schuller International. Ventilating louvers: Industrial Louvers. Storefronts: Carmel Building Products. Glazing: ACI Glass Products. Upward-acting doors: Cookson. Wood doors: Buell Doors Co. Locksets: Medeco/Russwin. Hinges: Hager; McKinney. Operators: Glynn-Johnson. Elastomeric coatings; Dex-O-Tex. Acoustic ceilings: Armstrong World Industries. Drywall: Domtar Gypsum. Paints: Sinclair. Laminate surfaces: Laminart; Wilsonart. Tile: Dal-Tile. Slate flooring: Walker Zanger. Indoor fixtures: Capri Lighting. Exterior floodlighting: Stonco. Elevators: Otis.

Pages 116-123
The International Terminal, Chicago O'Hare International Airport, Chicago
Group One Design—a joint venture of Perkins & Will Group, Inc., Heard & Associates, Ltd., and Consoer Townsend & Associates, Inc., architects
Pages 116-119—Curtain wall, aluminum and glass entrances; Flour City. Single-ply roofing: Firestone Building Products. Roofing at ticket pavilion: Sarnafil, Inc. Exterior 1000W HPS lighting: QL, Inc.
Pages 120-123—Upward-acting doors: Cookson. Interior laminate paneling: Wilsonart. Drywall partitioning, suspended metal ceiling: USG Corp. Storefronts, aluminum-and-glass interior doors: Linetec. Hollow-metal doors: Ceco Corp. Locksets: Russwin. Door closers: Yale (exposed); Keane-Monroe (concealed). Panic hardware: Von Duprin. Tile: American Olean Tile Co. Acoustic tile: Armstrong World Industries. Precast-terrazzo flooring: Wausau Tile, Inc. Fire-alarm system: Systems Technologies, Inc. Baggage handling conveyor: Sandvik/B.A.E. Water fountains: EBCO Manufacturing Co. (Oasis). Handrails: Chicago Ornamental Iron. Elevators and moving stairs: Montgomery Elevator Co.

Pages 126-127
Dudley Station, Boston
Domenech Hicks & Krockmalnic, Inc., Architect
Restoration of original copper roofing, cupolas, and finials: Gilbert & Becker. Translucent skylight panels: Kalwall, Inc. Skylight: Structures Unlimited. Fiberglass replicas of original molded-copper wall panels. Rocca Noto Sculpture Studio. ■




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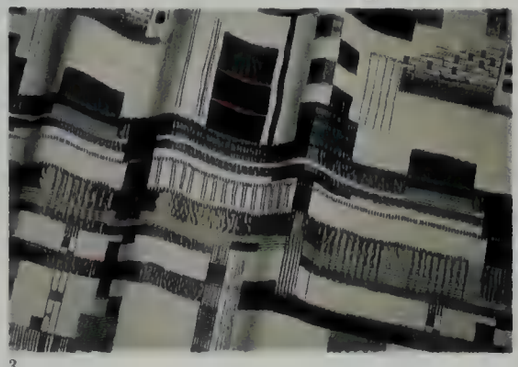
328. Reinvigorated. An improving office- furniture market convinced corporate parent Westinghouse Electric to pull the "For Sale" sign out of Knoll's window in January. And a bold dose of cost cutting, combined with significant capital expenditures in tooling and equipment and a new retail presence, may let Knoll return to its Bauhaus roots: making objects that are simple, elegant, and affordable. A look at new objects from the new Knoll: 1. Surf aftermarket accessories bring the newest biomechanical strategies to existing furniture. A lumbar support of molded foam, weighted to stay in place, lets each user scrunch into it to maintain a neutral body position. 2. Magnusson conference tables offer size, shape, wood finish, and wire-management options. 3. Fabrics from 70-year-old Bauhaus designs are produced in a mid-priced cotton blend. 4. Vignelli Associates' bent-metal-legged PaperClip cafe table (1994) works well with Harry Bertoia's chair (1952). The Knoll Group, New York City. ■



1.



2.

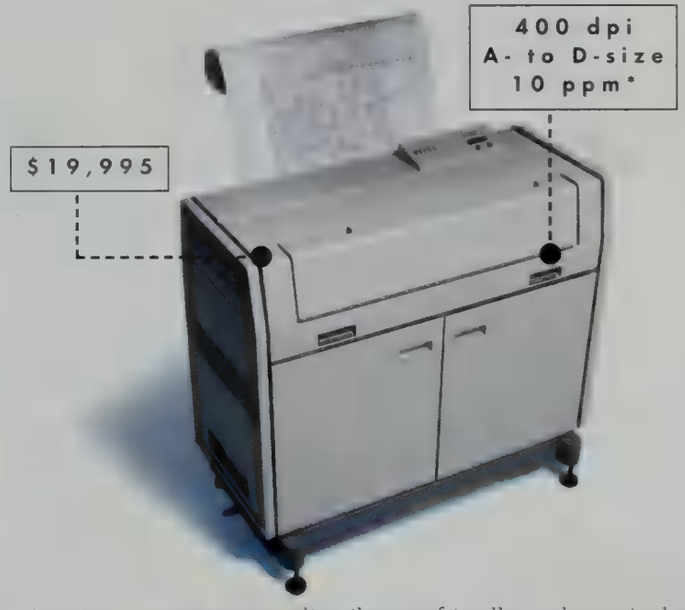


3.



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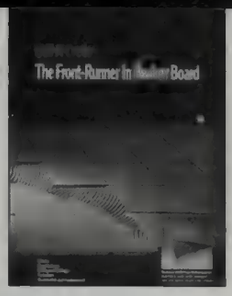
• COMPUTERS • COLOR • CALCULATORS • WIZARD® ORGANIZERS

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roduct Literature/Tile & Setting Materials



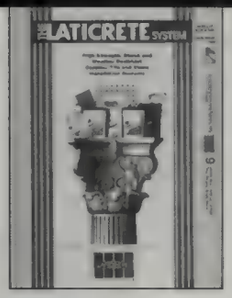
0. Decorative tile
68-page catalog illustrates all of
s maker's residential and commer-
l tile products, including
zed-ceramic floor and wall tile,
nocottura pavers, counter tiles,
l molded and painted accent
ces. Performance, installation,
t, and specification data included;
nplete color range shown. Florida
e Industries, Inc., Lakeland, Fla.



401. Concrete backer board
An eight-page brochure presents updated technical data on Util-A-Crete board for interior and exterior tile installations. Drawings detail applications on floors, countertops, on curved surfaces, shower and tub receptors, and in a fire-rated wall assembly. W. R. Bonsal Co., Charlotte, N.C.



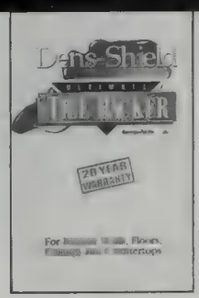
2. Tile-setting instructions
1994 edition of the Handbook for
amic Tile Installation helps archi-
s document tile specifications and
ng details to conform to the most
nt ANSI, ASTM, and other rec-
zed standards; published by a
e-association committee repre-
ing manufacturer, contractor, and
dards organizations. Tile Council
nerica, Inc., Princeton, N.J.



403. Installation materials
A 16-page architectural catalog describes the Laticrete tile- and stone-setting system. Color photos and cutaway details illustrate correct use of grouts, mortars, and membranes in commercial, residential, and institutional floors, plazas and other waterproofing applications, facades, and interior walls. Laticrete International, Inc., Bethany, Conn.



. Mexican tile and stone
rful, 60-page, spiral-bound
g covers glazed floor and wall
tone-look matte porcelain,
al marbles and granites, and an
al wood-parquet pattern tile
Close-up color photos give a
dea of how each tile looks,
and as installed; performance
isted. Interceramic USA,
llton, Texas.



405. Guaranteed tile backer
Booklet describes the 20-year guarantee offered by Dens-Shield moisture-resistant board, when used in interior walls, floors, ceilings, and countertops. Lighter than cement board, panels can be easily scored and snapped, and accept mortars or mastic for tile installation. Georgia-Pacific Corp., Atlanta.
Continued on page 149

re information, circle item numbers on Reader Service Card.

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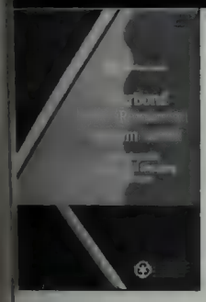
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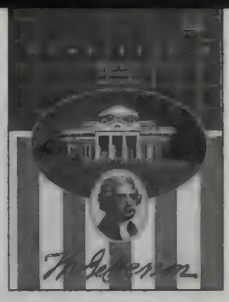
406. Canadian stones
A comprehensive reference for architects and other specifiers, a pocket-format guide to stone quarried in Ontario features full-scale color photos of granites, gneiss, sandstone, limestone, and other types, with geological and application information. Ontario Ministry of Mines, Sudbury, Ont.



407. Wall and floor tile
A short-form catalog highlights all Mannington ceramic products, including unglazed mosaics, marble- and granite-pattern commercial tile, and special shapes such as octagons. Durability and other test data listed for each tile. Mannington Ceramic tile, Lexington, N.C.



408. Underlayment
PerBond, a fiber-reinforced gypsum board, is said to be an excellent base for resilient and vinyl flooring as well as quarry and ceramic tile. Described as surpassing standard plywood, OSB, and lauan in retaining dimensional stability in high moisture conditions. Louisiana-Pacific Corp., Portland, Ore.



409. Architectural tiles
A 44-page catalog presents an enormous collection of decorative tiles, exterior pavers, ceramic wall and floor tiles, and natural and replica stone. Products range from acid-resistant flooring for food preparation factories to hand-painted tile murals for custom kitchens. Setting products included. Summitville Tiles, Inc., Summitville, Ohio.



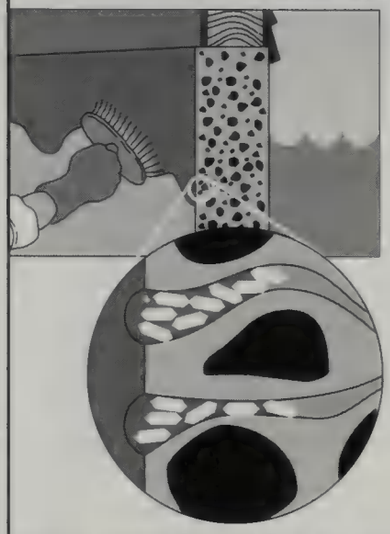
410. Sound-control assembly
Enkasonic composite-nylon matting prohibits sound and impact transmission when used beneath ceramic-tile or stone flooring. Placed between the floor and a support overlay, it lets the architect choose a hard-surface flooring option even where STC ratings must be above 50, as in apartments. Akzo Industrial Systems Co., Asheville, N.C.



411. Special installations
Developed in Germany, a tile-setting product line includes dozens of trims, nosings, edging profiles, separation membranes, and joint treatments. An eight-page brochure illustrates various trim types, with color photos and detail drawings. Schluter Systems, Plattsburg, N.Y.
Continued on page 151

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Product Literature/Tile & Setting Materials



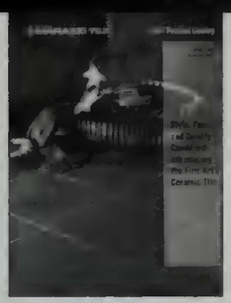
412. Grouts and mortars
A four-page catalog highlights a wide range of tile-setting materials, including polymer, acrylic, and modified-epoxy grouts, adhesives, tile sealers and grout cleaners, and glass-block mortars, as well as special items such as quarry-grade grout for the wide joints of saltillo-type rustic flooring. Southern Grouts & Mortars, Inc., Pompano Beach, Fla.



413. Colorful glazed ceramics
Residential/commercial tile is shown in dozens of bright, subtle, and mottled colors, decorative inserts—even designs that match popular china patterns. Most styles and colors of tile are available in at least eight field-tile sizes and over 30 different trim shapes such as corners and cove base. United States Ceramic Tile Co., E. Sparta, Ohio.



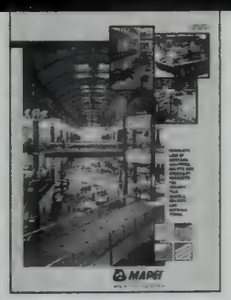
414. Super-rugged tile
16-page architectural catalog displays porcelain tile in settings from Palermo to Saskatoon. Patterns include marble-veined Pietre Preziose, natural-appearing Graniti-Fiandre, and solid-color Designer tiles. Large-format porcelain tiles can be specified in seven different surfaces, including low-relief patterns. Fiandre Ceramica Ltd., Itasca, Ill.



415. Silk-screened patterns
A 12-page catalog illustrates Empire tiles, with a special glaze and surface shading that mimics the soft tones of ancient pavers on a frost-resistant monocottura tile, and Mission field tile, listelli, and inserts that resemble handmade Saltillo pavers. Commercial-use tiles are solid-color and granite unglazed porcelain. Marazzi Tile, Sunnyvale, Texas.



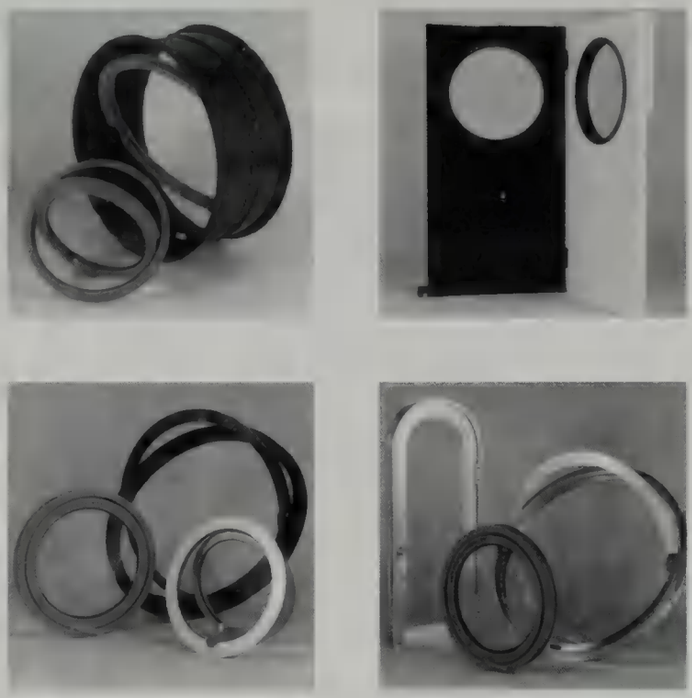
416. Porcelain flooring
Several new tile designs are introduced in an eight-page brochure, including Cross-Colors, a large-grained motif made in fresh, warm colors, and a terra-cotta-lookalike that doesn't have fading and absorption problems. Other heavy-use products include Cross-Plus, with a high coefficient of friction. Crossville Ceramics, Crossville, Tenn.
Product Data on CAD disk



417. Grout-selection guide
Mortar systems, specialty products such as all-solid epoxies, mastics for setting wall and floor tile, and 34 different colors of grout are described in a 16-page architectural catalog. Installations are shown in cutaway drawings; grout widths are matched with tile sizes. Mapei Corp., Elk Grove Village, Ill.*
Continued on page 153

For more information, circle item numbers on Reader Service Card.

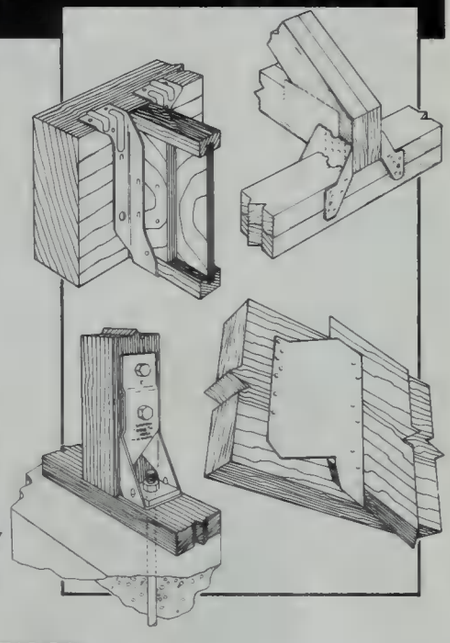
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Pretty faces come and go. But if you want true beauty in an exit sign, the choice is clear. Precise LED from Lithonia Lighting.

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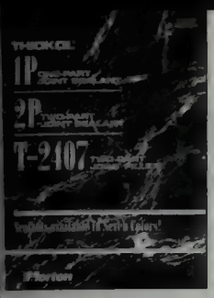
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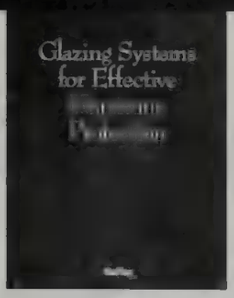
LITHONIA LIGHTING

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DIVISION OF NATIONAL SERVICE INDUSTRIES, INC.

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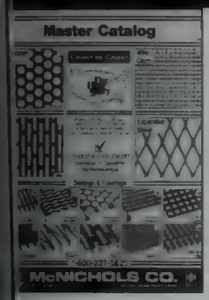
Product Literature

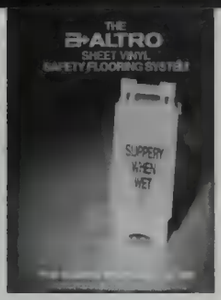




418. Curtain-wall sealant
New Thiokol polysulfide-rubber joint sealants are said to maintain an effective weatherproof bond between materials of dissimilar porosities, surface textures, or expansion coefficients, such as joints in masonry, metal curtainwalls, and precast facades; One- and two-part sealants come in seven colors. Morton International, Inc., Chicago.

419. Hurricane-resistant glass
A useful brochure explains how new building codes and standards address hurricane protection, provides forensic modeling of wind effects, compares the per-square-foot cost of various mitigation techniques for glazed openings, and details the advantages of laminated glass. Specific edge-capture designs shown. Monsanto Co., St. Louis.*





420. Perforated metals
A 48-page master catalog illustrates perforation and wire-mesh patterns for a complete line of metal products, from insect screening to industrial gratings. Includes load charts, finish options, non-skid profiles, and order-ing information. McNichols Co., Tampa, Fla.

421. Non-slip sheet vinyl
The heat-welded Altro safety floor is said to form a continuous surface impervious to dirt and water while meeting ADA and OSHA slip-resistance requirements. A four-page brochure provides installation photos, transition details, and technical and test data. Altro Floors, Los Altos, Calif.





422. Architectural metal roofs
A 32-page catalog uses color photos of recent projects to illustrate the appearance and shape options offered in profiled metal roof systems. Technical sections provide wind-load and other data, detail panel profiles and edge treatments, and cover special finishing metals such as terne-coated stainless steel. Petersen Aluminum, Arlington Grove Village, Ill.
Product Data on CAD disk

423. Wood-roof design
Proprietary PC software is said to be able to help design, lay out, and estimate a wood-roof project using either sawn or engineered wood products in just minutes. Two-part WoodCAD program analyzes conventional or panelized roof-framing systems, and details beams of up to six spans. Free tutorial. ECOM Associates, Inc., Milwaukee.*

Continued on page 155

For more information, circle item numbers on Reader Service Card.

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ARCHITECTURAL METAL PANELS

UNA-CORE and UNA-FAB custom architectural metal panel systems offer eight different panel systems, employing three component materials; Honeycomb, Composite and Plate, designed for caulked, gasketed or reveal joints to provide true design freedom.



CUSTOM COLUMN COVERS

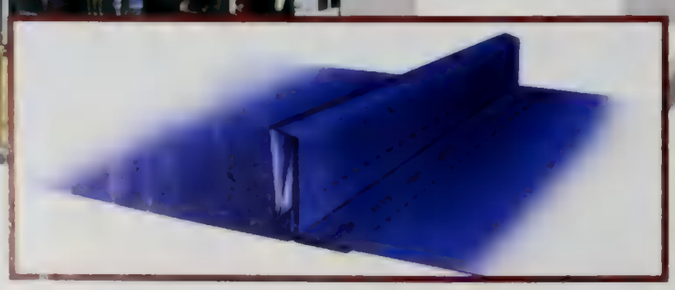
The UNA-FAB system offers a variety of opt for the architectural designer. Column Cove custom made in round, square, oblong and r tangular shapes, making it easy to convert a unfinished concrete column, I-Beam, corner dition or bullnose to enhance the structure's appearance.



ROOFING SYSTEMS

Copper Sales, Inc. manufactures four pre-formed roof and mansard systems; Snap-on Standing Seam, Snap-on Batten, a Lock Formed Standing Seam and the NEW UC-4 NO-CLIP SYSTEM. These roofing systems are available in all of the UNA-CLAD metal product lines, including the UNA-CORE Honeycomb Panel.





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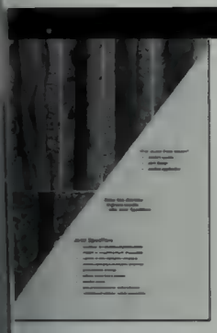
Product Literature



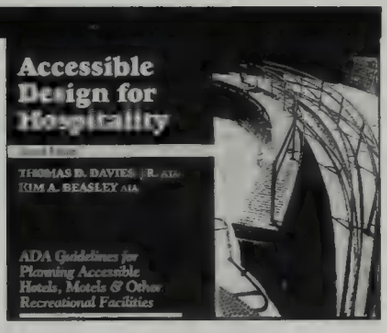
424. Structural spaceframes
A capabilities manual shows how KK Ball and Tube frame components can meet program-, site-, and load-specific needs. Photos show enormous atria, such as the Grand Slam Canyon in Las Vegas, as well as gas stations and toll booths. Generous CAD assistance available. MERO Structures, Inc., Germantown, Wis.*



425. Glazed CMU
A 12-page architectural catalog demonstrates the wide choice of color, texture, form, scale, and pattern offered by glazed-face structural masonry units. Illustrates all standard Spectra-Glaze II solid-color options, special shapes and trims, and construction details. The Burns & Russell Co., Baltimore.



426. Joint-design help
CD-based software is said to ensure proper design of all types of building joints, and to examine all the parameters affecting sealant performance to help out the correct sealant product. Matches building materials to be sealed with climate and anticipated movement. Avoids over- or under-design of joints. ChemTec Publishing, Toronto-Scarborough, Ont. *



427. Accessible lodgings
Order form describes a new 182-page book with information on how hotels and motels can be designed—or redesigned—to meet ADA requirements. Topics range from correct sizing of structural bays to choosing chairs in restaurants. Explains what is "readily achievable" when eliminating barriers in existing accommodations. PVA, Washington, D.C.



428. Impact protection
The most recent Acrovyn catalog illustrates high-impact wallcoverings and panel systems, acoustical treatments, door and frame protection, and column covers. Every surface texture, stone or other pattern option, and color choice is shown. Chair rail joint and wainscot detetails are shown; full test data listed. Construction Specialties, Inc., Muncy, Pa.
Product Data on CAD disk



429. Toilet partitions
Compartment panels can be porcelain-on-steel, baked enamel, solid polymer, stainless steel, high-pressure laminate, or solid phenolic: all are shown in a 16-page catalog. Describes all fitting and mounting options, as well as special finish options such as mar-resistant rigidized metal. Sanymetal, Div. Crane Plumbing Co., Somerset, Ky. ■

For more information, circle item numbers on Reader Service Card.

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■ **Ellison Balanced Doors were engineered to neutralize the effects of negative building pressure and exterior wind loads.** And they are easily adjusted to meet the ADA recommended 8 lb. pull pressure without the use of an operator. Ellison's original spring loaded shaft configuration provides plenty of mechanical advantage during opening and closing. A unique hydraulic check mechanism, concealed in the overhead frame member, can provide up to a 20 second delay prior to the closing cycle.



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Access should no be a challenge.

Ellison Balanced Doors provide a excellent approach to ADA entra compliance. They do not requi mechanical operators, they are extremely reliable, and they prov aesthetic value to any building design concept. Ellison can help with your next project – renovat or new construction.

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Ellison Bronze

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Product Literature Showcase

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Ancor Granite Tile

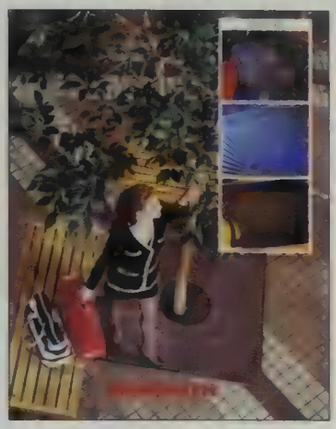


Ancor produces over fifty No. American and imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Ancor's honed finish tile is particularly suitable for high traffic commercial areas. 435 Port Royal West, Montreal, Quebec, H3L2C3, Canada. Ph# (514) 385-9366. Fax# (514) 382-3533. IT+SE Booth 4764

Ancor Granite Tile

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Ironsmith Tree Grates Comply with A.D.A. Mandates

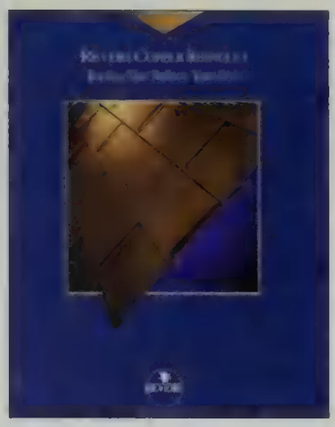


Ironsmith features 15 tree grate designs in compliance with The Americans With Disabilities Act, which mandates strict regulations for pedestrian safety and legal liability. A packet of ADA architectural requirements is included with new '94 catalog. All designs allow for tree growth, come in many sizes and factory finishes. 1-800-338-4766.

Ironsmith

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Revere Copper Shingles



Revere Copper Shingles are quicker and easier to install than ordinary asphalt shingles. There are no special skills required & no special tools. Because Revere shingles are manufactured from solid copper, not a foil laminate, they will likely last as long as the building they protect. To learn more about our copper shingles, or any of our other copper roofing products, call us toll-free at 800-490-1776.

Revere Copper Products

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Jerong Products, Inc.

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Heat-N-Glo

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The C/S Group

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Product Literature Showcase

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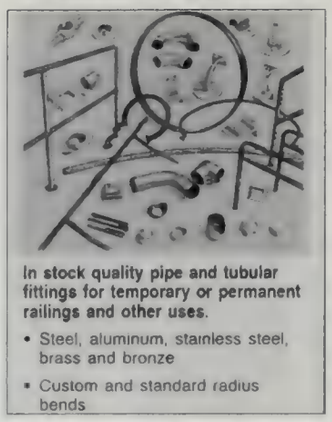


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Worthington Group, Ltd.

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Columbia Cascade

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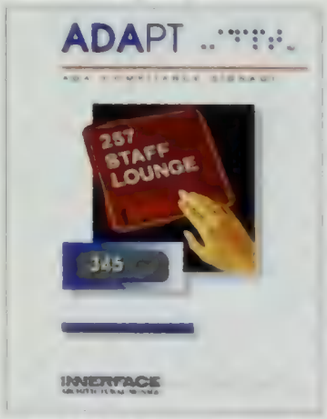


This 94-page design manual provides indepth information for the optimum use of steel joists and joist girders. As the largest producer in the United States, Vulcraft has the most experience and expertise in the application, design and manufacture of these products. The economies of steel joists and joist girders contribute to their increasing utilization.

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Interior Systems

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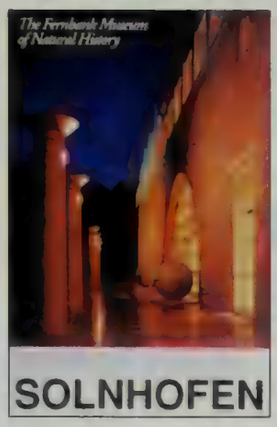


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Transwall Corp.

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Wall Street Journal March 3,1994, front [illegible] Mississippi's strong [illegible] and excellent quality of [illegible] to join an established [illegible] expanding to meet [illegible] Architectural & [illegible] We have the following openings for innovative team players with solid experience in healthcare/commercial/industrial projects: Senior Architectural Draftsmen - With in-depth knowledge of commercial building technology and architectural detailing. CADD use required. Staff Architects - To organize & produce Architectural & Design/Build projects under the supervision of a team leader. CADD use required. Quality Control Architect - To take responsibility for document review & coordination to achieve high quality project delivery. Send resumes: Barbara Basinger, McCarty Architects, 533 West Main St., Tupelo, MS 38801.

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Sources: Computer Delineation

Entries appearing on page 43 were created using the following hardware and software.

1. Beach house in the Hamptons by Adam Cohen. Hardware: IBM RISC 6000; software: AES Render; Output: Iris printer.

2. Children's Discovery Museum by Robert Frank Associates. Hardware: Apple Macintosh IIfx, E-Machines T-16 monitor, Microtek ScanMaker 600ZS; Software: Adobe Photoshop and Modelshop II. Output: Xerox Fiery color laser printer.

3. Yacht Club by Roger Patton Janssen. Computer: Apple Macintosh; Software: BAGH Technologies, Architrion; Output: CalComp pen plotter.

4. A Rowhouse Retrofit by Barry M. Yanku. Computer: PC-type 486-33mHz; Software: Autodesk AutoCAD 12 and 3D Studio, Adobe Photoshop; Output: Iris inkjet printer.

5. Graphics for Office Building Renovation by Architrave, Ltd. Computer: Apple Macintosh IIci; Software: autodessys form-Z (modeling and details); Strata Stratavision 3D (rendering); Aldus Pagemaker 5.0 (page layout); Output: Canon Color Laser Copier 500 (Cushing & Co., printers).

6. Oral-B Corporate Headquarters, by DES Architects/Engineers. Computer: Apple Macintosh 840AV; Software: autodessys form-Z (modeling), Raydream Designer (rendering), Adobe Photoshop (image editing), Kodak Photo CD (background scans); Output: Iris printer. ■

Clarification

Carlos Zapata Design Studio and Una Idea, architects for the Golden Beach, Florida, residence on pages 64-71 of the April 1994 RECORD, have requested an amendment to the credits listed. These should now include:
Presentation: Claudia Busch, Helen Ferguson, Roberto Ochoa
Project coordinator: Melissa Koff
General contractor: Cruz R. Rodriguez; project manager: Fulton Salazar
Landscape architect: Raymond Jungles
Lighting design: Elizabeth Bull
Electrical: Mesa Electric Systems. ■

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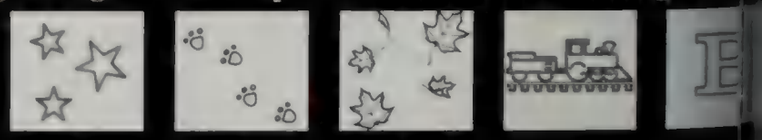
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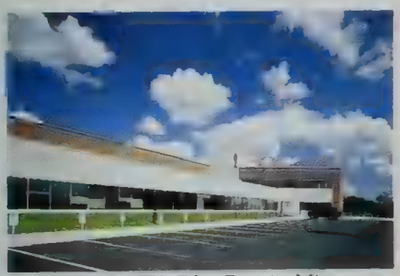
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Architect Bashing

In response to your editorial [Architect Bashing: Enough Already!, RECORD, June 1994], after all the negative press in magazines on a national basis and in local papers, I couldn't agree more.

As you mention, this is entirely a problem which we reinforce. Also, I feel that this is a problem which is more severe in the United States (discounting Prince Charles).

Your point about the title "architect" is interesting, but with all the other changes to our profession, I would hate to lose the one area of continuity.

My bottom line reaction—we need to stop first, the others will follow later. If we acted as a cohesive brotherhood, it would not have been as easy to have "lost" control over areas of interest (i.e., the IBD, ASID/AIA conflict).

I would hope that the majority of your readers would agree and take a moment to reflect on their own attitude and professionalism.
Craig M. Nelson
FEH Associates, Inc.
West Des Moines, Iowa

T-House

What could T possibly stand for ["Suit to a T," RECORD, April 1994, pages 90-95]? How about terrible? Or maybe tyrannical? That's it: Tyrannosaurus Rex House...

Well, I'm no hero (or even slightly known or for that matter good) architect but I can spot a turkey (T for turkey?) when I see one. From the first paragraph it is obvious that something is rotten in the [illegible] when [illegible] that Mr. T-House is "nestled among trees." For your edification, nestled implies a gentle fitting together, much the way lovers nestle tenderly together in bed or a bird almost inconspicuously fits its nest into a tree. This study in large scale Lego-erectus is more like a rape, its arrogant form cruelly thrust into the forest on a callously scoured, ground-zero, landing pad. I do not for one second believe that the rocky clearing denuded of almost all vegetation is a natural occurrence that Mr. Ungers carefully "nestled" his creation into.

A photo description tells us more of this marvel when we learn that the whole hulking, top-heavy (T for top-heavy?) assemblage is covered in 1/4-in. thick steel that has "oxidized to a vibrant rust color." Vibrant? Vibrant implies vital and brilliant, life emitting and emotionally uplifting. Could it be that corrosion signifies something much more discernible in the real (rather than architwhimsical) world? How about decay or ruin or disintegration or neglect? Is this the vibrance of so much abandoned, rusted junk piled like trash (T for trash?) onto a bucolic setting? That such a blatantly brutal and inelegant composition appeals to someone with an "overdeveloped intellect" is frightening...It is the same kind of thoughtless (T for thoughtless?) intellect that allows so-called Wise Use proponents to see the world as a pile of clay ripe for exploitation...
Nick Peterson
Architect
Albany, Calif.

Correction

Photography of the Adelbert Hall restoration at Case Western University, Cleveland [RECORD, February 1994, pages 102-107] was by Cervin Robinson.

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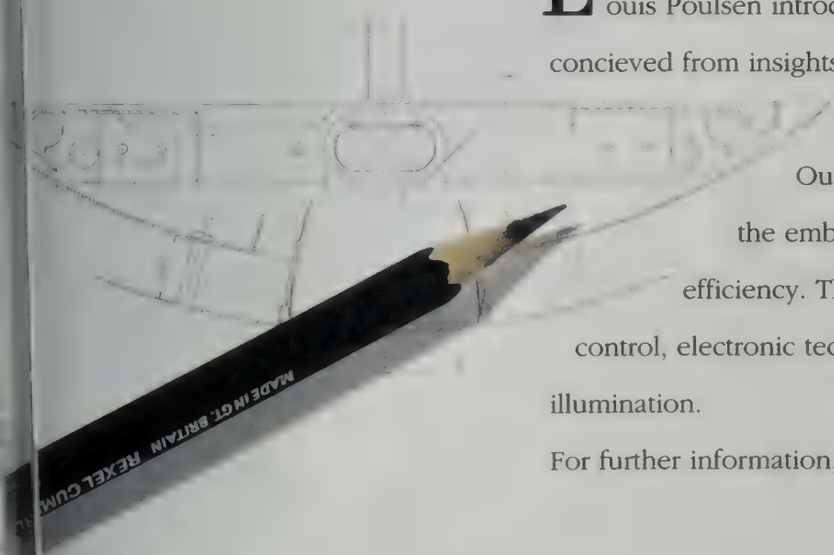
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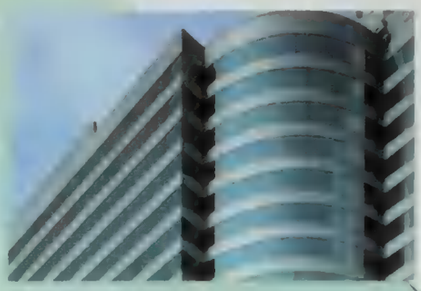
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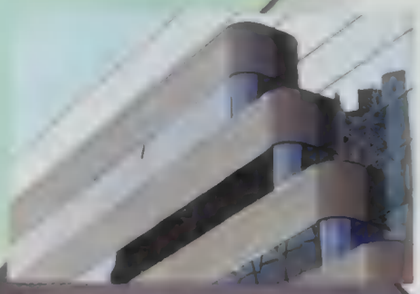
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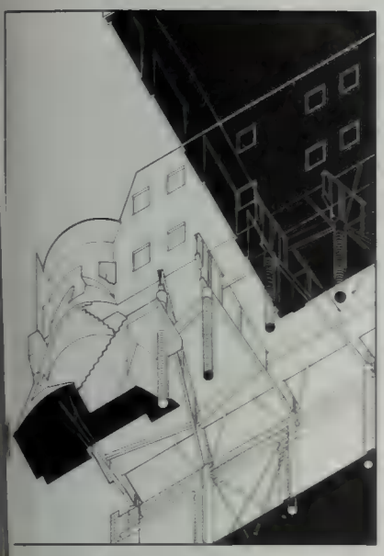
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Part of the Eric Moss-designed Samitaur complex in Los Angeles.

Next month

The building types study on leisure facilities includes Rafael Viñoly's design for the new physical education center at New York's Lehman College, an aquatic center at Maryvale, Mo. by Shaughnessy Fickle & Scott, and a gymnastics facility in Alicante, Spain by Enric Miralles. Also featured is Disney's Resort in Florida by Arquitectonica.

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The point of the televised chase of O. J. Simpson on the evening of Friday, June 17 was not what most commentators thought—that reality is more powerful than virtual reality, or make believe. The true message is that this real-life chase was merely a blip on the age-old curve of human love for the fictional that often ends up making fiction seem more real than the real thing.

The celebration of virtual reality raises for the architect a number of practical, organizational and moral issues. On the plus side is the ability, using computer modeling and projection technology, to give clients a foretaste of what their buildings will look like, inside and out, when walking through or when at rest, day or night time, under a sunny sky or cloud cover. But the trail is dotted with landmines. What about the very ease with which one can fake reality by scanning a photograph into a computer and deleting offending graffiti and fire hydrants; or adding nonexistent landscaping?

From a practice angle, the potential of organizational virtual reality is immense. Firms of architects and consultants have long teamed together as associations or joint ventures, but these entities were always hamstrung by bad communications. Today, computer networks make possible instant and accurate contact among team members separated by oceans and continents. The same promise lies in architectural schools working together globally on identical problems, as MIT dean William Mitchell demonstrated last year in a problem assigned to five schools on three continents, using an electronic network that allowed for virtual teamwork, virtual crits, and a virtual jury. As the fiberoptic "Infobahn" comes into its own [RECORD, Editorial, October 1993], all of this will become routine.

At a larger scale, virtual reality raises deeper questions for the architect. Take Walt Disney Company chairman Michael D. Eisner's decision to build a Civil War theme park in Prince William County, Virginia for two thirds of a billion dollars, including two golf courses, hotels, and 2,281 units of housing. Why, cry opponents, create make-believe battlefields and fake battles when the real thing is all around you? By dramatizing and focusing—as only theater can do—the venues and events of the Civil War in a controlled, virtual environment, claims Eisner, you can learn and have fun besides. And create jobs for a hard-pressed construction industry. The flaw in the opponents' case is not that the idea of such a theme park is wrong—after all, theater in Greek days used machinery to fake reality; the medieval jousting tournaments merely *simulated* warfare. The sin is rather in the crass siting, in direct local competition with the real thing, diluting the impact of the real battlefield and threatening, like an urban Gresham's Law, to make the virtual more real to a TV-raised culture than the real real.

Howard Mac Fish recently wrote to the *Princeton Alumni Weekly* objecting to a plan to cover the lacrosse field with artificial turf. "Lacrosse," he wrote, "is an organic game; it finds nurture in mud and rain...the educational implications are disastrous. At the deepest level, the lessons learned are that 1. life is best lived separate from nature, 2. the earth's lack of smoothness and cleanliness gets in the way, 3. 'correcting' nature is superior to cooperating with her, and 4. we can't do our best unless conditions are just right."

Virtual reality is here to stay. How *virtuous* it is, is up to us. *Stephen A. Kliment*



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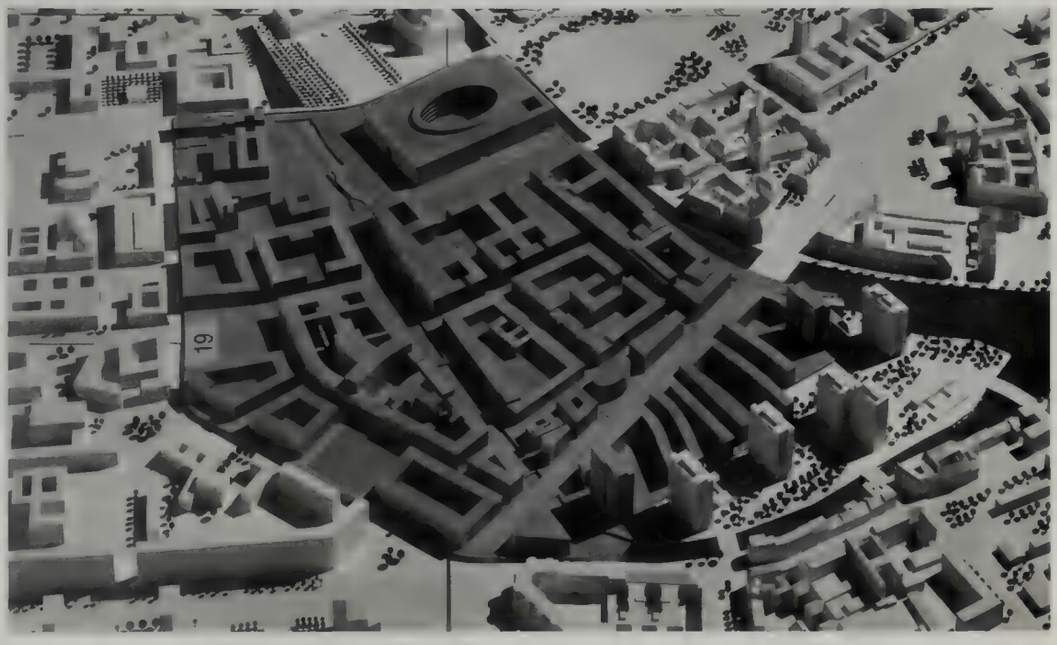
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Germany

Young Architects Surge in Open Spreeinsel Competition

The master plan competition for the Spreeinsel, a central Berlin river island slated to become the symbolic and functional heart of the New Germany, has been won by Bernd Niebuhr, a virtually unknown 35-year-old who was able to shine because the contest was completely open (to avoid feelings that closed events create predictable "name" designs). That unknowns did well is good, but since first-rate established firms rarely can compete with newcomers whose overheads are zero, designs that may forever identify the Spreeinsel as the center of a new kind of society, perhaps even a new Europe, were not altogether impressive.



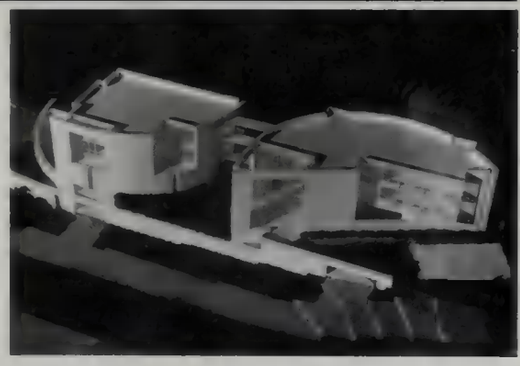
Niebuhr's scheme (top) created interesting outdoor spaces and river-edge relationships, and daring in its amphitheater-shaped civic center placed into the core where the imperial Schloss once stood and where the hulking Communist-era Palast der Republik still does. But the distinctly different place the val suggests would hardly be visible at pedestrian level, where the exterior might appear forbidding. It seemed too massive to clonk down just below the old Dom and Schinkel's Altes Museum and not sensitively related to the Alexanderplatz to the East. To be fair, it didn't relate well to the Unter den Linden on the West either—and the proposed Alexanderplatz complex is not inspiring—but, still, a Spreeinsel that does not link West and East could create resentment in Eastern Germany and, indeed, in Eastern Europe. Second-place Kruger, Schuberth, Vandreike (right) features a main building whose terraced court formed a handsome overlook toward the Spree River and the East, and similar courts elsewhere oriented to the West. There probably will be contests for parts of Niebuhr's plan, but construction is moot, what with lively sentiment for rebuilding the Schloss, opposition to the Palast der Republik demolition, and doubt about the forms of ministries if and when they move from Bonn. *Peter Blake*



Los Angeles

Getty Service Structure Adapts to Terrain and Neighbors

Jeffrey M. Kalban & Associates has shaped a 65,000-sq-ft ground-maintenance storage and office building with a visiting artist studio at the entrance to the new Getty Center, not only to suit its steeply sloped and curving terrain, but also to fit the adjacent residential neighborhood. A glass bridge connects its two wings, visually pulling the hillside through the project and reducing the apparent mass of the building. The decks will be planted in French and English lavender.■





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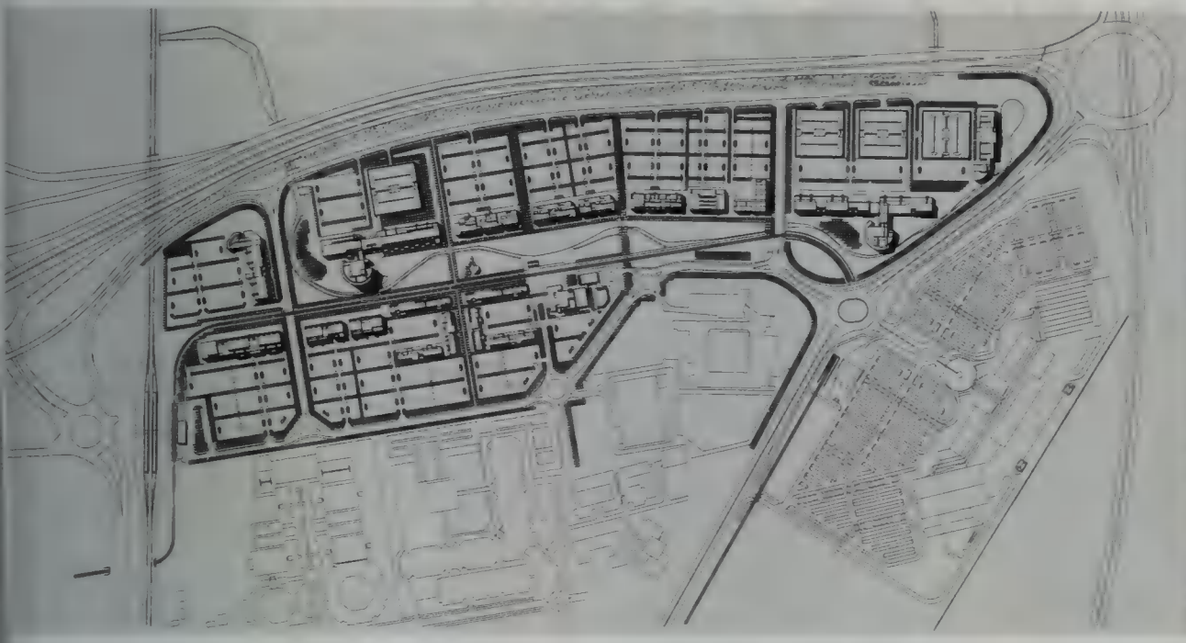
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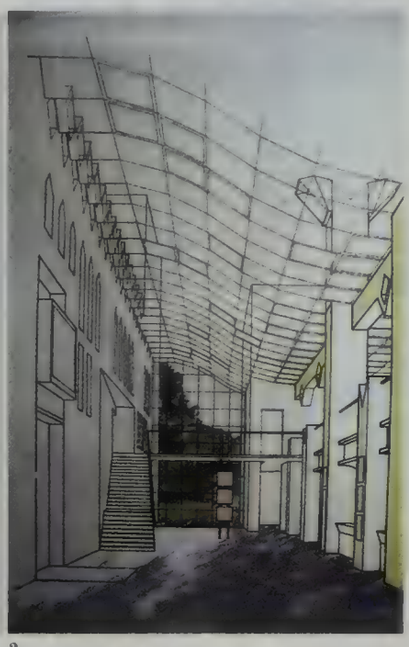
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Edinburgh

International Conference Looks to Renaissance for Clues to 21st-Century City Life





2

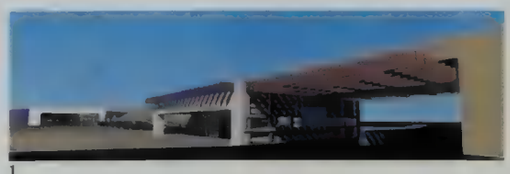
Some 1,600 architects from around the globe gathered in Edinburgh recently to contemplate city life at the annual convention of the Royal Incorporation of Architects in Scotland (RIAS), said to be the largest annual assembly of architects in Europe. Le Corbusier was the villain of the event, which played as paean to Renaissance merchant cities, where, according to many speakers, differences rubbed shoulders and the urb was the home of rit large, with buildings performing the functions of rooms. Some participants aimed that, as national boundaries disappear and cities emerge as the main players, aesthetic values may be the only counterbalance to uniformity in a world of diminishing difference. Among the presentations were Richard Meier's master plan for an Edinburgh business park with water features *(1)* and Ungless & Latimer's reworking of an Edinburgh neighborhood using gray water to create a wetlands and tanks of solar-heated water to modulate daylight entering an environmental center *(2)*. The formal sessions ended with Bosch Haslett's conversion of an agora into an empty contemplative space.

Among newly inducted RIAS fellows were architects Kenzo Tange and Sir Denys Lasdun, writers Charles McKean and Gavin Stamp, and the engaged-elsewhere actor Sean Connery, who, rumor has it, "will do anything for Scottish architecture." A short business session focused on the results of a survey of how clients perceive architects (only interested in design, driven by their own agendas, poor fiscal managers, always looking for deadline extensions) and a proposed advertising campaign to introduce the public to the value of professional design.■

U.S./Mexico

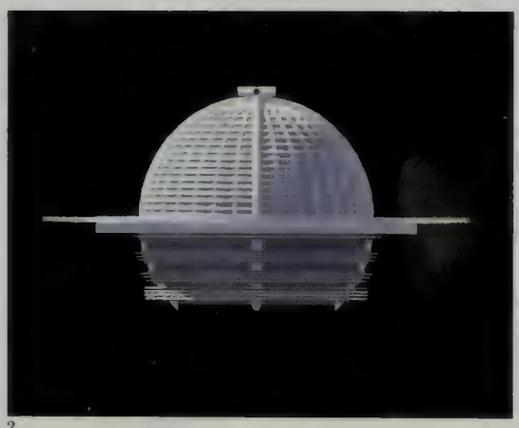
CAD Competition Sees Border-Straddling Trade Complex to Serve NAFTA

Students from Mississippi State University swept the field in a recent competition for a CAD-designed joint government/private-interest complex to straddle the U. S./Mexico border and serve as an architectural parallel to the North America Free Trade Agreement. Ron Allen *(2)* and James Black *(3)* took the two top prizes, with second place shared by Anthony Lawrence and Bradford Kinney of the same school, and Manche Mitchell of the University of Kentucky at Lexington. The American Institute of Architectural Students and Graphisoft U. S.



1

co-sponsored the competition. Sir Norman Foster chaired the jury, which included International Union of Architects president Sara Topelson de Grimberg, Richard Lundquist, Carl Abbot, and AIAS member Liliana Zisa from the New Jersey Institute of Technology.■



2

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5r

Design

Briefs

Winners

•James Ingo Freed has been inducted into the American Academy of Arts and Letters. The Academy has also awarded the Arnold W. Brunner prize to Renzo Piano and its "Academy Award" to Craig Hodgetts and Ming Fung.

•For designing the "Expressionist Utopias" exhibit at the Los Angeles County Museum of Art, Coop Himmelblau has been named a winner in the American Association of Museum Curators Exhibit Competition.

Moves

Carol Clark has been appointed executive director of the New York AIA chapter. She was previously deputy executive director of the New York Department of City Planning where she handled intergovernmental relations.

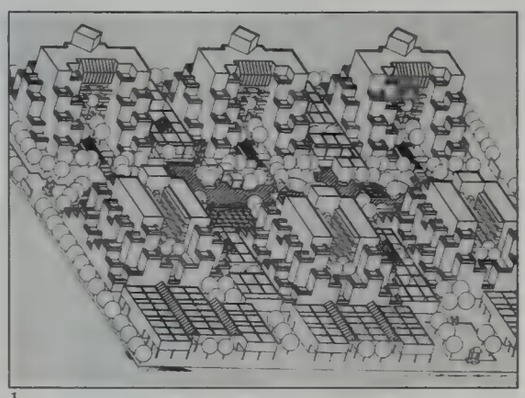
Remembered

Architect/crusader for Palestinian-Israeli peace Rustum Bastuni died in May at age 71.

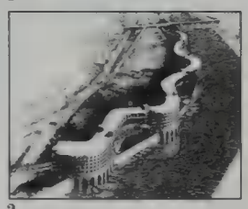
Brazilian landscape architect Roberto Burle Marx died in June at age 84. He designed the gardens of OAS headquarters, Washington D.C.; Unesco headquarters, Paris; and parks and hanging gardens for Brasilia.■

Global

Asia/Otis Student Competition Seeks Regional Urban Housing



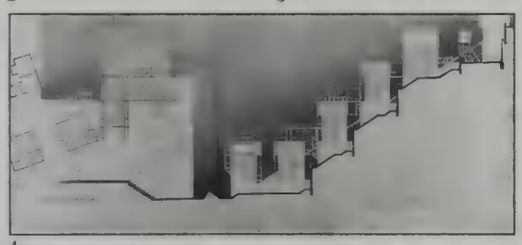
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4

Liu Hong Wei, Yin Yi Mu, Xu Feng and Xiao Feng from China's Tianjin University have won the Grand Prize (1) in the fifth annual student design competition sponsored by Otis Elevator and the Association of Collegiate Schools of Architecture. Rati Chomakhidze and David Vashakidze of Tbilisi State Academy of Arts in the Republic of Georgia won the European prize (2). Martin Lee Yue Kong of the University of Hong Kong won the Australasia prize (3). Ernesto Inostroza and Walter Quintana of the University of Chile won the Americas prize (4). The competition, themed to urban housing and drawing over 1,700 region-specific entries from 186 schools in 49 countries, was judged by Charles Correa, Joan Goody of Goody Clancy, John Miller of London, and Otis vice president for product strategy Joe Bittar. Having expanded this year to include Asia and Latin America, the sponsors hope to have the support systems in place to include Africa in next year's competition. Prizes totaled $28,000 cash plus travel stipends for the students and their faculty sponsors to present the projects at the annual ACSA European Conference on Urban Issues in London.■

Paris

Sottsass Shows, Tells, Looks Forward to Inner Quiet and Recasting Ideas on Architecture

ttore Sottsass has had "a nomadic life made of notes." His curiosity has led him to explore architecture, industrial design, furniture, decorative arts, and photography, inked investigations that are given equal space in the first major retrospective of his work in over 15 years, through September 5, the Centre Georges Pompidou. Some 400 awings and objects cover the 1960's Olivetti typewriters, the Memphis years, the 1990 nergieen *(2)* furniture towers, continuing rk in glass and ceramics *(1)* and architecte models *(3)*. At 76, Sottsass has returned his beginnings, redefining his ideas about chitecture in several new house projects. y father was an architect," he says. "I ew up with architecture as nourishment. I pped doing architecture because I couldn't l with institutions and laws. I was young, nting to be in on the beginning of things. The Memphis idea was a sort of a historical note, not in the sense of history, but in the sense of myself. It had to come. Now, designing houses can support the possibility of being silent, at peace with yourself."

Claire Downey



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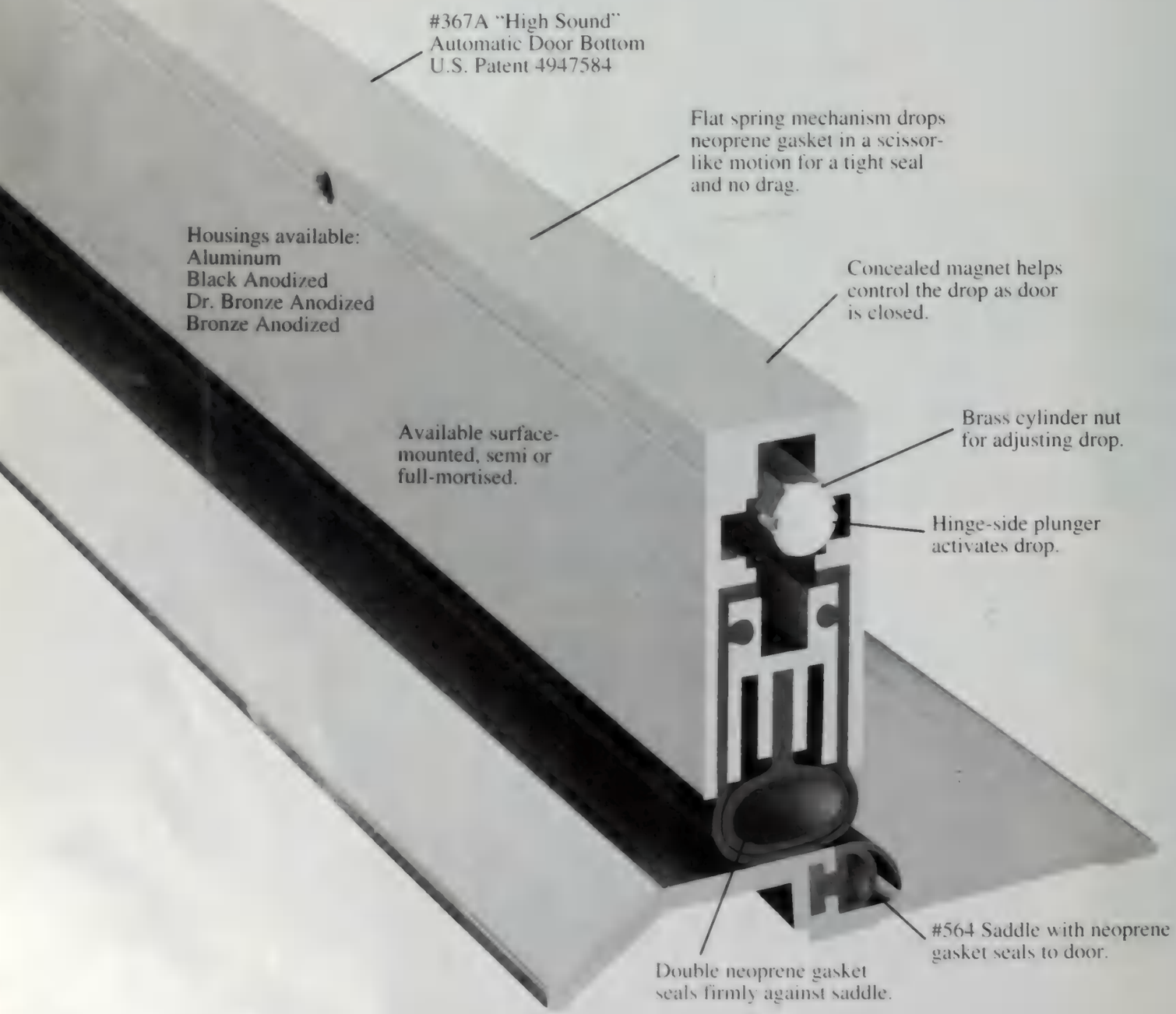
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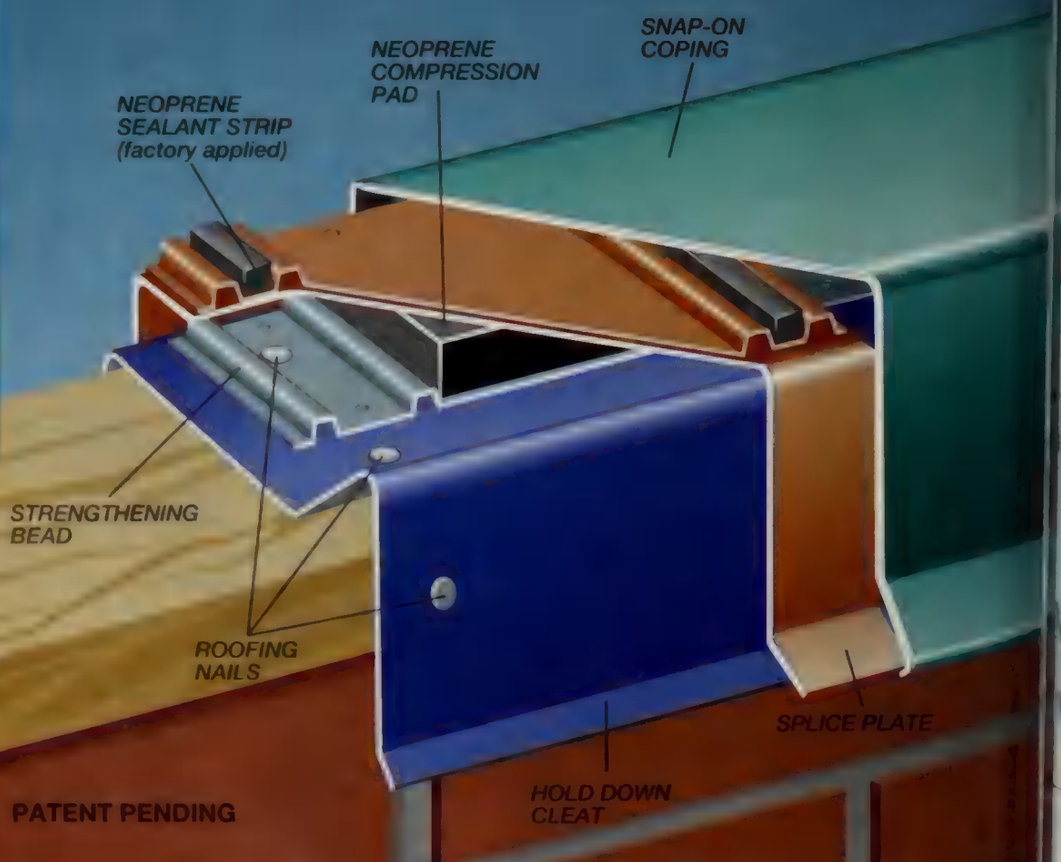
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Foster Awes AIA With Range of Skills

A highlight of this year's AIA convention in Los Angeles was Sir Norman Foster's concentrated lesson on how a firm is able to ally a unique poetic insight with forefront technology, however unorthodox. Foster described his proposed use of oil rig technology to produce big, rigid components such as structure and cladding anywhere in the world and ship them on barges to the new island-based airport at Hong Kong.

Another example of imaginative thinking is his firm's invention of a special bus for the disabled to roam London's botanical garden, an ingenious vehicle that needed no ramps or level changes, and was researched and built in eight months for the equivalent of $30,000, a fraction, according to Foster, of what the traditional auto industry would have charged. Foster's office likewise developed a series of urban furniture, and for a large office park project in Duisburg, Germany, evolved a system of space-conserving alternate-energy sources that capitalized on the property of chilled water of taking up far less space in a building than chilled air.

Elsewhere, Jim Franklin, an AIA resident fellow, once again lured a large and attentive audience to his small-practice management workshop. This isn't surprising considering the parlous state of the California construction climate, in which many new offices have been founded by architects laid off by the larger firms.

In business sessions, delegates voted down a Massachusetts resolution to promote adoption of uniform licensing laws; defeated a Texas resolution to make sure AIA rules and policies conform to a narrow interpretation of AIA's professional objectives and eschew controversial issues beyond them, but passed a somewhat similar Alabama move to limit any Institute funding of its components and any outside groups to initiatives that are in line with AIA's stated purpose.

The Walter Wagner Forum, an annual event sponsored jointly by the AIA and RECORD, and commemorating RECORD's late editor, took up the role of the architect as entrepreneur, deciding that such a role offers as many opportunities as it poses a threat to professionalism.

In other events, the top 1994 Benedictus Awards for Innovation in Laminated Glass went to Odile Decq and Benoit Cornette for their Banque Populaire de l'Ouest in Rennes, France.

11,421 attended the convention, held in James Freed's spectacular new glass and steel convention center [RECORD, January 1994], down from 13,500 in Chicago in 1993. Raymond G. Post, Jr. of Baton Rouge was chosen first vice president. Ronald Altoon of Los Angeles, Phillip Gerou of Evergreen, Colo., and Carole Olshavsky of Columbus, Ohio were elected vice presidents. *S.A.K.*

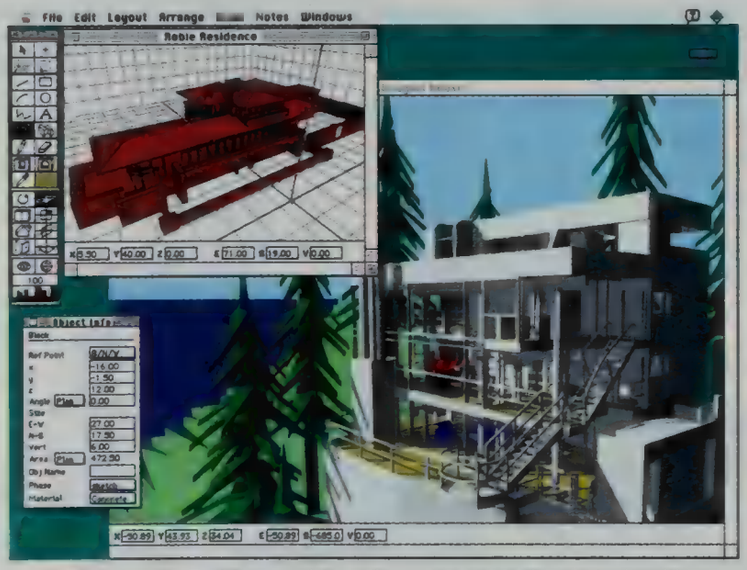
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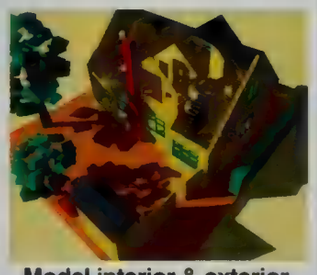
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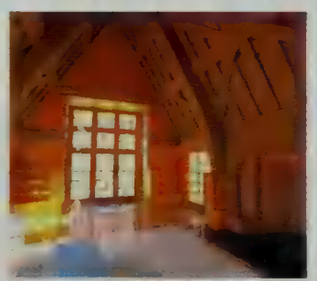
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Boston

CONTECHS 94 Cites Seven Buildings

Turning advanced construction technology (ACT) into vital building designs is a perennial challenge to architects and engineers. The five first-place and two second-place award winners chosen by the jury at the recent CONTECHS'94 conference in Boston represent the best of the 48 submitted entries in CONTECHS's ACT awards program.

The winners were: the Noble Research Center at Oklahoma State University, Stillwater, a laboratory of advanced solar energy technology, designed by The Architects Collaborative in association with Frankfurt-Short-Bruza Associates; restoration of intricate ornamental concrete work on the Baha'i House of Worship in Wilmette, Illinois, by Wiss, Janney, Elstner Associates, engineers; renovation of the old Dudley Station, Roxbury, Massachusetts, by Domenech Hicks & Krockmaric, Inc.—an inventive use of modern products as replacements for deteriorated walls and roof; IBM's emergency access and egress tunnels at Essex Junction, Vermont, by architects Symmes Maini and McKee Associates, an ingeniously solved code-required scheme which was built without interrupting operations; and Charlestown Navy Yard rowhouses, Charlestown, Massachusetts, by William Rawn Associates, a design that made rigorous and appropriate use of traditional construction technology.

Second place winners were HOK for the Reorganized Church of Latter Day Saints Temple in Independence, Missouri, and East End Terminal at La Guardia Airport, New York City, by Morse Diesel International.

Judges consisted of Leon Glicksman, head of MIT's building technology group, structural engineer William LeMessurier, Fred Moavenzadeh, head of MIT's center for construction research, Smith Hinchman Grylls Associates vice president Thomas O'Connor, Canada's National Research Council member Madeleine Rousseau, and RECORD editor Stephen Kliment.

CONTECHS was co-sponsored by ASI/Boston and the Construction Information Group of McGraw- Hill, Inc. ■

Washington, DC

Foundation Names Bonner to Board

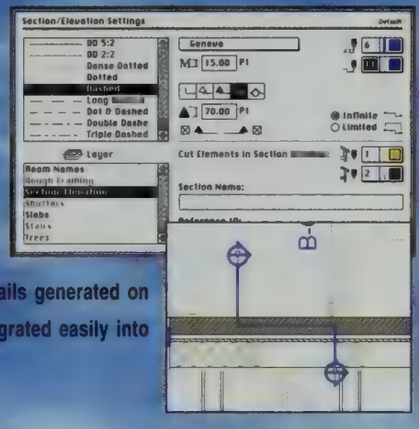
Stephen B. Bonner, president since 1991 of McGraw-Hill's Construction Information Group (which includes RECORD), has joined the board of regents of the American Architectural Foundation. The Foundation was launched in 1942 to promote excellence in American architecture by serving as a link between the public and the profession. Activity highlights include the annual celebration Accent on Architecture (jointly with the AIA), support of local units' efforts in their communities, the Grand American Avenue 1850-1920 exhibit, and public television programming. Bonner joins a group that includes RTKL's Harold Adams, SUNY Purchase president Bill Lacy, Max Bond, and Architect of the Capitol George White. ■

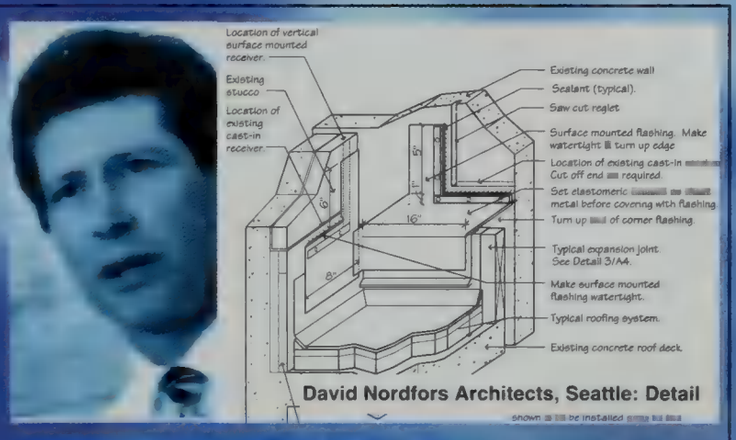
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David Nordfors Architects, Seattle: Detail

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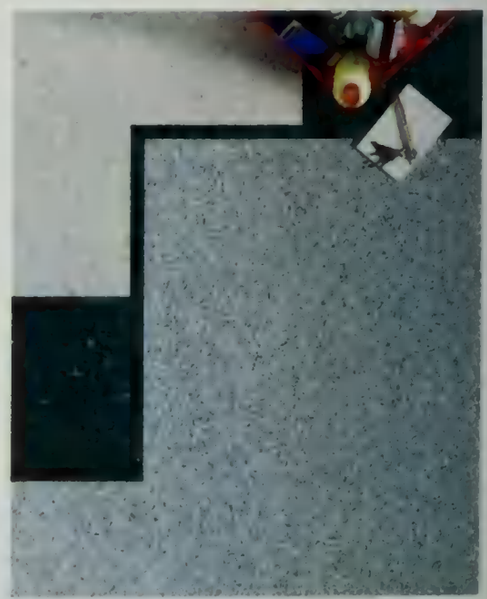


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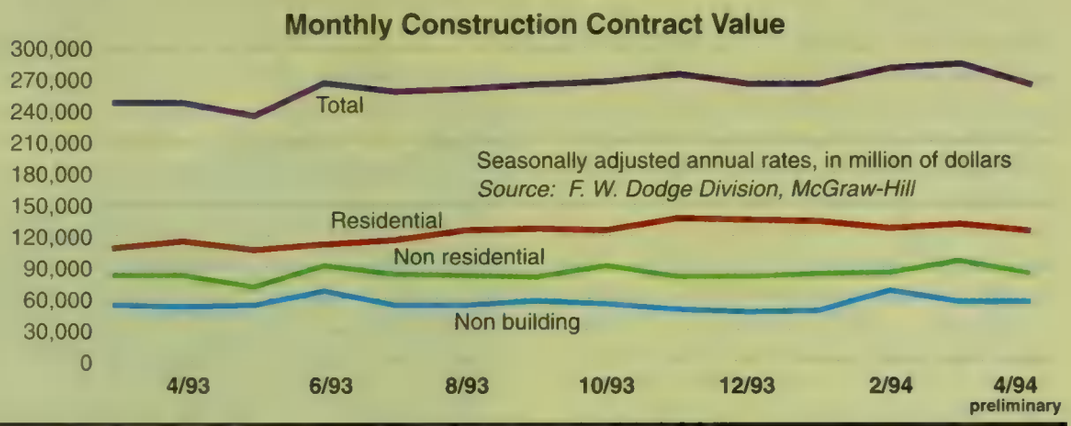
Azrock Industries Inc., a subsidiary of
Domco Industries Ltd

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Indicators

Construction takes downward turn

Construction contracts fell in April, following a modest recovery in February and March after a three-month slump. While nonbuilding construction remained the same from March to April after a February decrease, nonresidential building dropped 12 percent and residential construction decreased seven percent. These drops followed a two-month upward trend. Despite the falling numbers, the January through April period marks a six-percent increase over this period last year. ■



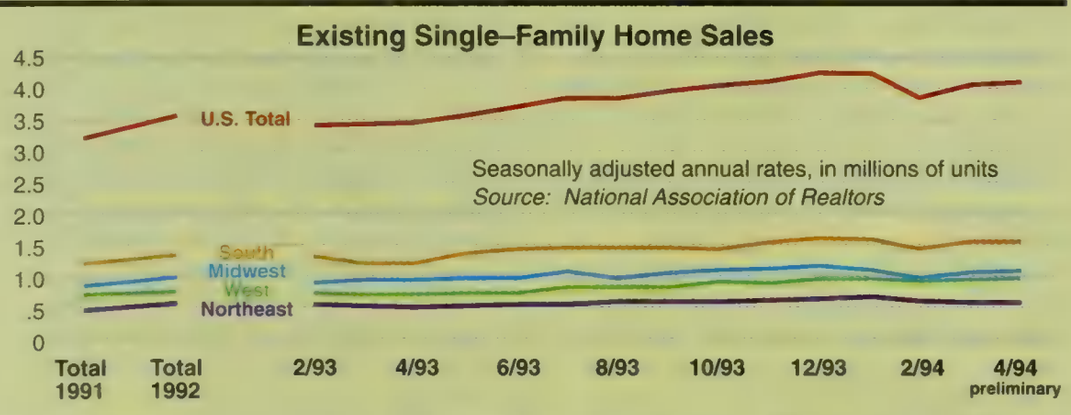
Housing starts bounce back

New home building has gained ground this spring. The peak was December. After a harsh winter, the March increase hit 11.1 percent, returning starts to the same levels as November and December of last year. The threat of rising interest rates and heightened consumer confidence spurred the industry's activity. The figures don't reflect May interest-rate jumps. Housing analysts caution that starts will likely ease back as the year progresses. ■



Home sales beating 1992 figures

Strong home sales figures reflect consumer confidence in the economy and recognized early 1994's bargain interest rates. The National Association of Realtors reports a seasonally adjusted annual sales rate of 4.12 million single-family homes for April, up 19.1 percent over the year before. The western region led this increase, upping sales by 34.7 percent. The average selling price of homes in April stood at $108,900 nationally, compared to $105,500 last April. ■



The Profession This Month

- **End of Interest-Rate Volatility?:** Phillip E. Kidd considers the implications of gyrations in the financial markets; also new building-cost indexes. *Page 28*
- **Recovery: Gradual, Extended, But On Track:** Robert Murray updates the 1994 Construction Outlook. *Page 30*
- **Now Departing: Airport Noise:** Acoustic building retrofits require sensitivity to details—and politics. *Page 32*
- **A Slim Tower Packages Multiple Functions:** James Stewart Polshek and Partners elegantly accommodates demanding programmatic and technological needs in a high-density addition to a congested medical complex. *Page 36*
- **Designwork Shop and Conversion Plus:** Stephen S. Ross reviews an architecture-oriented modeling program and a handy Mac-to-PC converter . *Page 42*
- **Architectural Roofing:** Product news on new metals with old looks. Also new wayfinding system for the sight-impaired. *Page 44*

End of Interest-Rate Volatility?

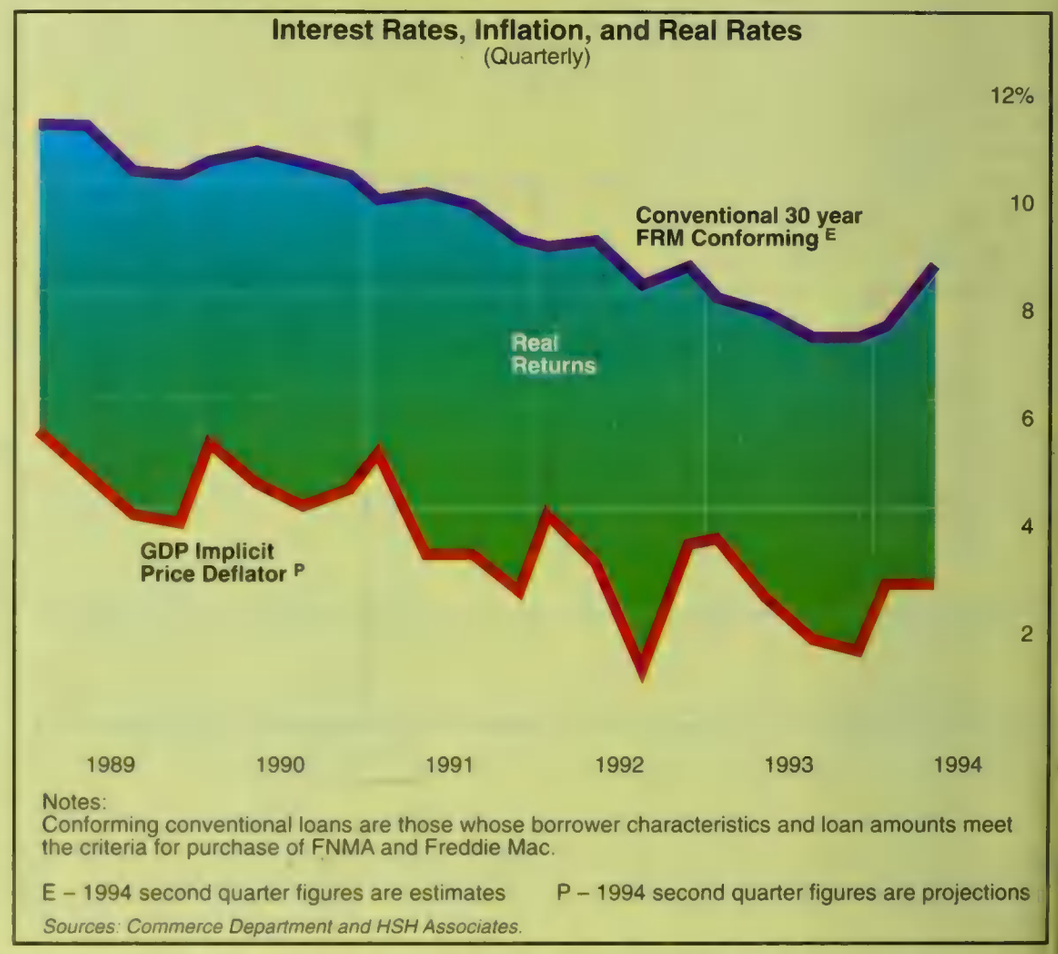
Speculative fever, as much as inflation fears, drove recent rises in borrowers' interest rates. Markets should settle down for the rest of 1994.

By Phillip E. Kidd

Just when it seemed historically low interest rates were bringing home buyers and investors off the sidelines and into construction investing, financial markets went into an anti-inflation frenzy—pushing rates up rapidly and unexpectedly. Are low rates a thing of the past? Will the jumpy market sideline investors, thus further stretching an already weak construction recovery?

True, inflation worries made the headlines, but an unhealthy combination of financial leverage and speculation in illiquid financial instruments also drove the financial markets.

Exceptionally fast economic growth in early 1994 awakened fears that inflation was about to break loose. To demonstrate its resolve to head off inflation, the Federal Reserve made what should have been seen as a trivial increase on February 4. Instead, it took markets accustomed to low rates by surprise (rates have been trending downward since 1990, last year reaching levels not seen since the early 1960s), and dramatically altered expectations in the financial markets.



Financial speculators versus Fed

Instead of reassuring investors, the Fed's move wrought havoc for speculators counting on continued low rates. When rates were slumping, individual and institutional investors had pulled funds out of low-yielding investments in favor of the bond or stock markets, driving prices of both higher. Money went to European countries when their interest rates began to slip in 1993. Other funds headed to developing countries in Latin America and Asia, where prices of financial instruments on immature or newly created stock and bond exchanges soared. Speeding this transfer of billions upon billions of dollars was the increasingly electronic integration of global financial markets.

Sophisticated investors exploited the unusually large spread between short- and long-term domestic rates, eagerly borrowing short-term funds to buy long-term bonds. Borrowed funds were aggressively used to purchase a myriad of derivative products to hedge against interest-rate or currency risk. (The value of derivatives is based on conventional financial instruments, such as stocks and bonds. Futures, options, and interest-rate swaps are common examples of derivatives.) In the 1990s, investment bankers invented intricate combinations of derivatives to take advantage of even tiny differences in currency values.

By early 1994, huge numbers of domestic and foreign investors had wagered billions, often with borrowed money, that interest rates in the U. S. and around the world would continue moving lower. On February 4, the Federal Reserve changed the game by edging the funds rate up. Experts had not, however, understood the size of the speculative bubble. As rates advanced, the prices of fixed-rate securities fell. Abruptly, the collateral backing loans was worth less. Lenders asked borrowers either to make a partial repayment or supply more collateral to cover the loans. Strapped for cash, borrowers tried to liquidate some of their derivative holdings. Unfortunately, complex derivatives are usually tailored for specific needs or situations, severely limiting their marketability. Unable to sell these derivatives easily, borrowers sold more readily marketable securities, especially treasury bonds and domestic stocks. That drove their values down, generating the need for even more sales of these securities. Quickly the selling pressure spread, hammering stocks and bond prices around the world, especially on exchanges in developing countries.

As rates climbed and uncertainty spread, U. S. bond investors continued to fret about inflation. Caught off guard by the tumult in the domestic markets, and forced to play catch-up, the Federal Reserve pushed the federal-funds rate up three more times throughout the spring to 4.25 percent on May 17. In turn, long-term rates rose nearly 2 percent above their October 1993 lows.

Phillip E. Kidd, Ph.D. is a real estate and economic consultant in Stamford, Conn.

Commodity Prices Up; Labor Prices Steady

Will the Fed keep pushing rates up?
By late May, the rapid escalation in rates had broken the speculative bubble and, along with a slowing in key economic indicators, calmed the domestic financial markets. Soon investors will recognize that inflation is not much of a threat this year, and their demand for ever-larger real returns will ease (the gap between the lines of the graph opposite). As a result, long-term rates will drift downward in the second half.

In particular, rates on 30-year single-family mortgages will slip back from May's 8.50- to 9.0-percent range toward a 7.75- to 8.50-percent range. Lenders will also use attractive initial rates on adjustable-rate mortgages (ARMs) and two-step mortgages (in which the initial rate is set below market for three, five, or seven years, then reset to the prevailing market rate for the remaining loan term) to entice reluctant home buyers back to the housing market. By mid-summer, housing starts and sales will be fully recovered from any ill effects of the spring run-up in rates.

Nor should the current rates restrain public or institutional development based on loans or floating bonds. These owners' decisions are based more on their individual fiscal health; rates are not so out of line as to change their decision-making rationale. Retail building will continue to draw support from solid gains in housing starts. Meanwhile, persistent demand from pension funds and other institutional investors for income properties with strong cash flows will encourage multifamily and office-property owners to spend more on upgrading to attract or hold tenants.

Continued economic expansion? Yes
While it may not continue at the late-1993 rate, the economic expansion should continue. Recently, the economies of several of the country's major European trading partners have started to recover. As their growth improves, foreign demand for U. S. industrial production will increase. Domestic manufacturers, already accelerating their construction expenditures to capture a greater share of the U. S. market, will boost such outlays even more to meet rising overseas demand for their products. ■

This month marks the return of Building Cost Indexes in a revised format. We are now obtaining figures from the Construction Economics Department of *Engineering News-Record* (*ENR*), which allows reporting of more recent data.

Price rises look somewhat slower in 1994 than they were last year. The 7.4 percent overall rise in prices was driven largely by a 34 percent increase in 2-by-4 lumber prices. Lumber rose another 34 percent in the first quarter of 1994, though prices will likely moderate as the spring inventory build-up dissipates. A few other commodities—asphalt and fabricated structural steel—have also gone up recently. Price increases may outpace general inflation in 1994 because many manufacturers scaled back production so much during the extended construction recession that capacity is now much lower.

Labor, on the other hand, has gained little, and increases are expected to remain within the 3 to 4 percent range this year. Cities with the fastest rising prices are typically in the Northeast (which is beginning to join the recovery), and the Midwest (which suffered least in the downturn). Higher prices in California can be pinned on earthquake rebuilding, though the weak underlying economy in that state bodes ill for extended price increases.

Using the indexes
Those who have followed RECORD's indexes in the past will find that the data is reported below in a way very similar to that used when Dodge Cost Systems was the data source. *ENR* checks spot prices monthly for commodities to get an early measure of price movement. The commodity prices aren't averages; actual prices in a city may vary depending on the competitive environment and local discounting practices. By using so few commodities as the basis for prices, volatility can readily be detected, but the indexes are vulnerable to price changes specific to a commodity (as is the case for lumber these days).

Building Cost Indexes

	1990	1991	1992	9/93	12/93	3/94	6/94	% change from 3/94	%change from 6/93
Atlanta	2233.80	2278.83	2404.75	2477.13	2458.75	2508.84	2513.86	+0.2	+1.5
Baltimore	2579.90	2508.06	2607.76	2673.24	2787.51	2867.82	2803.46	+0.6	+2.2
Birmingham	2149.96	2189.75	2279.26	2352.15	2485.05	2582.97	2496.13	-3.6	+1.4
Boston	3110.03	3102.31	3355.57	3539.63	3624.03	3526.11	3596.09	+2.0	0.0
Chicago	2893.60	3034.72	3162.99	3325.70	3347.46	3352.90	3385.54	+1.0	+2.6
Cincinnati	2638.73	2674.15	2817.16	2920.20	2892.78	2892.78	2949.90	+2.0	+2.0
Cleveland	2886.93	2903.81	2903.10	3088.76	3088.76	3301.60	3319.82	+0.6	+3.3
Dallas	2061.61	2215.88	2278.21	2307.62	2365.65	2574.11	2585.70	+0.5	+0.1
Denver	2321.28	2375.26	2438.39	2501.00	2573.90	2723.27	2660.41	-2.4	-1.4
Detroit	2974.47	3046.92	3136.74	3278.20	3373.95	3449.02	3440.36	-0.3	+0.6
Kansas City	2645.28	2637.20	2677.21	2873.20	2874.34	2961.58	2916.25	-1.5	+2.5
Los Angeles	3020.51	3097.83	3198.66	3359.03	3334.43	3362.31	3415.04	+1.6	+4.3
Minneapolis	2648.43	2711.50	2811.14	2989.48	2978.60	3152.68	3196.33	+1.3	+6.1
New Orleans	2220.20	2260.52	2360.24	2330.86	2414.37	2506.85	2604.77	+3.9	-1.5
New York	3847.21	3997.91	4151.28	4343.76	4349.20	4298.61	4382.77	+1.9	+2.9
Philadelphia	3040.85	3169.81	3130.58	3532.34	3377.98	3405.18	3435.77	+0.8	-4.3
Pittsburgh	2717.08	2807.73	2954.64	3038.97	3140.13	3257.09	3247.32	-0.3	+3.2
St. Louis	2602.16	2686.93	2743.01	2840.58	3034.48	3050.80	2963.30	-0.9	+2.2
San Francisco	3245.04	3270.90	3298.09	3463.34	3428.04	3467.40	3499.57	+0.9	+3.6
Seattle	2552.58	2715.04	2787.74	2948.18	2980.82	3073.30	2991.70	-2.7	-0.1
20-City avg.	**2702**	**2751**	**2834**	**3009**	**3046**	**3116**	**3115**	**-.03**	**1.6**

Source: *Engineering News-Record, Construction Economics Department. The Building Cost Index combines 68.38 hours of skilled labor weighted by the 20-city average of bricklayers', carpenters', and structural ironworkers' rates, plus 25 cwt of standard structural steel shapes at the mill price, plus 22.56 cwt (1.128 tons) of portland cement spot-priced locally, plus 1,088 board-ft of 2 by 4 lumber spot-priced locally. The base year is 1913 = 100. To compare a given city's costs by percent, divide one index into the other. Example: the index for a city for one period (200) divided by the index for an earlier period (150) yields 1.33, which means the costs in the later period are 33 percent higher than the earlier period. Likewise, the earlier period's costs are 75 percent of the those in the later period (150 divided by 200=.75 or 75 percent).*

Recovery: Gradual, Extended, But Still on Track

By Robert Murray

Though 1994 is the third year of the construction recovery, growth has been so subdued (9 percent in 1992 and 6 percent in 1993) that it may seem invisible to many. Compared to a typical recovery, the industry has seen smaller gains, and improvement in fewer regions and fewer building types. At a similar point in the 1977 and 1984 recoveries, the growth in construction value was much higher: 55 percent over the low point in 1977 and 36 percent in 1984, compared to the meager 15 percent in 1993. Though housing has been very important in this recovery, it showed double and triple the improvement in earlier recoveries; income properties also contributed strongly to 1977 and 1984 growth, but not so now.

Recently, the overall economy has expanded robustly (fourth quarter 1993 growth was 7 percent, compared to the meager 0.8 percent and 1.8 percent of the first and second quarters). Thus, the construction recovery should gain momentum as 1994 proceeds, and broaden in terms of both construction type and region. Early results for the year's first quarter showed this trend: non-residential building climbed 2 percent above the previous three months, while public works jumped 9 percent, balancing a slow start for housing due to the harsh winter in many parts of the nation. There are special risks, however, in this gradual and extended recovery. The building types that fueled growth up to now (single-family housing and transportation public works) are likely to lose momentum. Will other sectors offer enough support to keep the recovery going?

Housing: strength early; tapering later

Housing activity in 1994's first quarter slipped back slightly from 1993's end-of-year strength, but this was due more to harsh winter weather than rising mortgage rates. With improving consumer confidence, the stimulative effects of last year's 7 percent mortgage rates finally took hold, boosting [illegible]'s annual total to 1.016 million units (F.W. Dodge basis). A single-family rebound [illegible] to show up in second-quarter figures [illegible] reasons: pent-up demand from

[illegible] is Vice President of [illegible] at McGraw-Hill's Construction Information Group.

1994 National Estimates Dodge Construction Potentials June 1994

		1993 Actual	1994 Forecast	Percent Change 1993/94
Nonresidential Buildings				
Floor Area (in millions of sq. ft.)	Office Buildings	89	98	+10
	Stores and Shopping Centers	207	225	+9
	Other Commercial	183	200	+9
	Manufacturing Buildings	105	115	+10
	Total Commercial & Manufacturing	584	638	+9
	Educational,	157	162	+3
	Hospital & Health	73	71	-3
	Other Nonresidential Buildings	144	154	+7
	Total Institutional & Other	374	387	+3
	TOTAL NONRESIDENTIAL BUILDINGS	958	1,025	+7
Contract Value (millions of $)	Office Buildings	$12,206	$13,700	+12
	Stores and Shopping Centers	13,062	14,550	+11
	Other Commercial	8,971	10,075	+12
	Manufacturing Buildings	8,495	9,400	+11
	Total Commercial & Manufacturing	$42,734	$47,725	+12
	Educational	$18,291	$19,775	+8
	Hospital and Health	10,200	10,050	-1
	Other Nonresidential Buildings	16,675	18, 125	+9
	Total Institutional & Other	$45,166	47,950	+6
	TOTAL NONRESIDENTIAL BUILDINGS	$87,900	$95,675	+9
Residential Buildings				
Dwelling Units* (thous. of units)	Single Family Houses	1,016	1,075	+6
	Multifamily Housing	180	200	+11
	Total Residential Buildings	1,196	1,275	+7
Floor Area (millions of sq. ft.)	Single Family Houses	1,861	1,965	+6
	Multifamily Housing	190	210	+11
	Total Residential Buildings	2,051	2,175	+6
Contract Value (millions of $)	Single Family Houses	$110,533	120,425	+9
	Multifamily Housing	11,206	12,625	+13
	Total Residential Buildings	$121,739	133,050	+9
Nonbuilding Construction				
Contract Value (millions of $)	Transportation Construction	$35,285	$38,300	+9
	Environmental Construction	16,584	17,150	+3
	Total Public Works	$51,869	$55,450	+7
	Utilities	$4,593	$5,000	+9
	TOTAL NONBUILDING CONSTRUCTION	$56,462	$60,450	+7
All Construction				
Contract Value (millions of $)	**Total Construction**	$266,101	$289,175	+9
	Dodge Index (1987=100)	103	112	

*F.W. Dodge basis

In this update of 1994's Construction Outlook, F. W. Dodge economist Robert Murray predicts the construction recovery will widen even if overall economic expansion is less robust than late 1993.

1994 Regional Estimates Dodge Construction Potentials June 1994

Contract Value (millions of dollars)	1993 Actual	1994 Forecast	Percent Change 1993/94		1993 Actual	1994 Forecast	Percent Change 1993/94
Northeast							
CT, ME, MA, NH, NJ, NY, PA, RI, VT							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$6,807	$7,425	+9	Single Family Houses	$12,630	$13,575	+7
Institutional and Other	8,287	8,950	+8	Multifamily Housing	1,924	2,250	+17
Total	$15,094	$16,375	+8	**Total**	$14,554	$15,825	+9
Nonbuilding Construction	$12,060	$12,425	+3	**TOTAL CONSTRUCTION**	$41,708	$44,625	+7
North Central							
IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$9,753	$10,875	+12	Single Family Houses	$25,001	$25,950	+4
Institutional and Other	11,193	11,400	+2	Multifamily Housing	3,118	3,125	-
Total	$20,946	$22,275	+6	**Total**	$28,119	$29,075	+3
Nonbuilding Construction	$11,405	$12,375	+9	**TOTAL CONSTRUCTION**	$60,470	$63,725	+5
South Atlantic							
DE, DC, FL, GA, MD, NC, SC, VA, WV							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$7,913	$9,425	+19	Single Family Houses	$27,198	$31,475	+16
Institutional and Other	8,258	9,625	+17	Multifamily Housing	2,339	2,950	+26
Total	$16,171	$19,050	+18	**Total**	$29,537	$34,425	+17
Nonbuilding Construction	$10,605	$11,025	+4	**TOTAL CONSTRUCTION**	$56,313	$64,500	+15
South Central							
AL, AR, KY, LA, MS, OK, TN, TX)							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$6,762	$8,350	+23	Single Family Houses	$18,516	$20,300	+10
Institutional and Other	7,516	7,400	-2	Multifamily Housing	1,162	1,300	+12
Total	$14,278	$15,750	+10	**Total**	$19,678	$21,600	+10
Nonbuilding Construction	$8,996	$9,700	+8	**TOTAL CONSTRUCTION**	$42,952	$47,050	+10
West							
K, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY							
Nonresidential Buildings				**Residential Buildings**			
Commercial and Manufacturing	$11,499	$11,650	+1	Single Family Houses	$27,188	$29,125	+7
Institutional and Other	9,912	10,575	+7	Multifamily Housing	2,663	3,000	+13
Total	$21,411	$22,225	+4	**Total**	$29,851	$32,125	+8
Nonbuilding Construction	$13,396	$14,925	+11	**TOTAL CONSTRUCTION**	$64,658	$69,275	+7

Prepared by the Economics Department, Construction Information Group, McGraw-Hill Information Services Company, Robert Murray, vice president, economic affairs

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winter, homebuyers entering the market to avoid further increases in mortgage rates, and strong levels of consumer confidence combined with healthy economic expansion. Support should also come from regions late to this recovery, the Northeast and West.

The critical issue facing housing in 1994 is the impact of recent interest-rate hikes. Though buyers have been very rate-sensitive in the last few years, the recent movement has still stayed within a fairly narrow range by historical standards. And the 8.5 percent rate current at press time is still quite low relative to the early 1980s. Homebuyers are also able to avoid some of the interest-increase sting by returning to adjustable-rate mortgages, where initial percentages remain attractive and future increases are capped.

The Federal Reserve's aggressive moves to cap future inflation add a new element of uncertainty to the housing market. Most analysts regard the climb in long-term rates (which went even higher than the Fed's) an overreaction. By pushing up the federal-funds target to 4.25 percent and the discount rate to 3.5 percent in mid-May, the Fed succeeded in calming the market, at least temporarily. Long-term rates even edged down, suggesting that mortgage rates would be able to stay in the 8 to 9 percent range. The much slower pace of economic growth for 1994's first quarter (2.6 percent) should also allay fears that the recovery is overheating.

The housing market's upward momentum will taper off in the latter half of 1994 as some erosion in consumer confidence combines with the higher rates to induce a single-family slowdown. The year as a whole, boosted by 1994's first-half strength, will see single-family housing rise to 1.075 million units, a gain of 6 percent over all of 1993 and the highest annual amount in eight years.

Institutional: certain sectors are bright

During the 1992-93 period, increased fiscal stress at the state and local level led to a decline for institutional building types. By the end of 1993, an improved economic climate offered relief. A recent study by the National Governors Association pointed toward rebounding state revenues, creating

Continued on page 91

Now Departing: Airport Noise

By Wendy Talarico

Airplane noise severe enough to require remediation can affect thousands of residents and businesses. As a result, more architects are likely to get involved with buildings or retrofits near airports. The insidious nature of airplane noise makes it uniquely challenging for owners and designers of buildings within an airport flight path. The low-frequency rumbling generated by take-offs and landings invades buildings through windows, doors, vents, and other openings. A plane taking off generates noise levels of between 90 and 120 decibels (dB), depending upon weather conditions, how heavily loaded the plane is, and what type of engines it has. Landing generates 75 to 90dB. In the most severely affected areas, occupants can't shout loud enough to be heard.

Airport noise problems have grown as rapidly as air travel. Quieter airplanes and noise-reducing flight paths have lessened problems in some cities. In others, traffic volume has ballooned, with the overnight-package business taking up the slack left by flat passenger demand, according to the Air Transport Association. (Planes may take off every 30 seconds during peak hours at busy airports.)

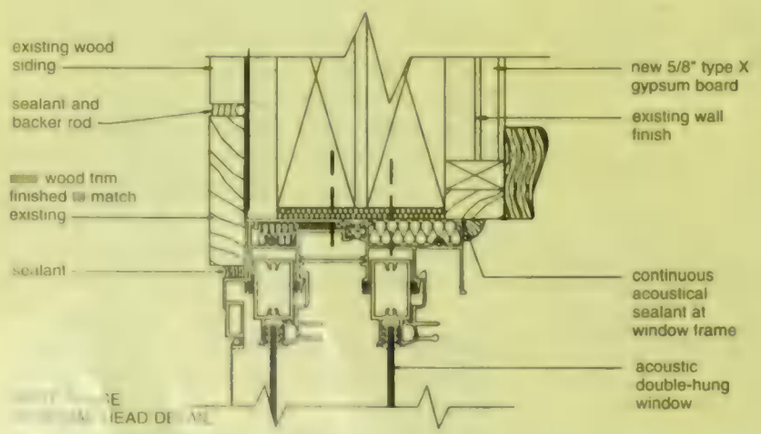
Wendy Talarico, of Fredericksburg, Virginia, is a writer specializing in technology

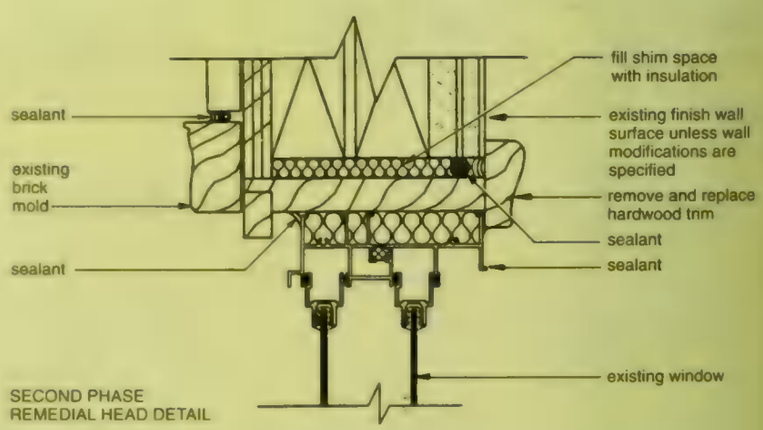
Airplane noise first became a problem about 20 years ago. Passage of the Aviation Safety and Noise Abatement Act created a remediation funding stream fed by taxes on tickets and aviation fuel under the Federal Aviation Regulations Part 150. Airports that seek Part 150 assistance may be acting to avoid lawsuits from area residents who find their property is devalued because of noise. The money is also used to help communities enact ordinances that dictate new construction standards for residential and commercial structures, making items like acoustically rated windows and extra insulation mandatory. Zoning regulations may limit what can be built in areas most impacted by noise. These areas are defined by a noise measurement called the day/night level, a weighted average of the airplane-noise levels within the area, and mapped as contours. Nighttime flights are multiplied by a factor of 10 since much less noise can disturb sleep.

Sealing the paths noise takes

"The best structures for noise abatement are concrete bunkers," says acoustical engineer Julie Wiebusch, a principal at The Greenbusch Group in Seattle. But, since few people want to live or work in a bunker, it's up to the architect and the acoustical engineer to develop a hierarchy of noise-abatement measures. Orienting the building properly is the first step, Wiebusch says. The North Sea Tac Community Center in Sea Tac, Wash. (page 34-35), is positioned so the gym backs up to the runway, its concrete-masonry bulk shielding the rest of the structure.

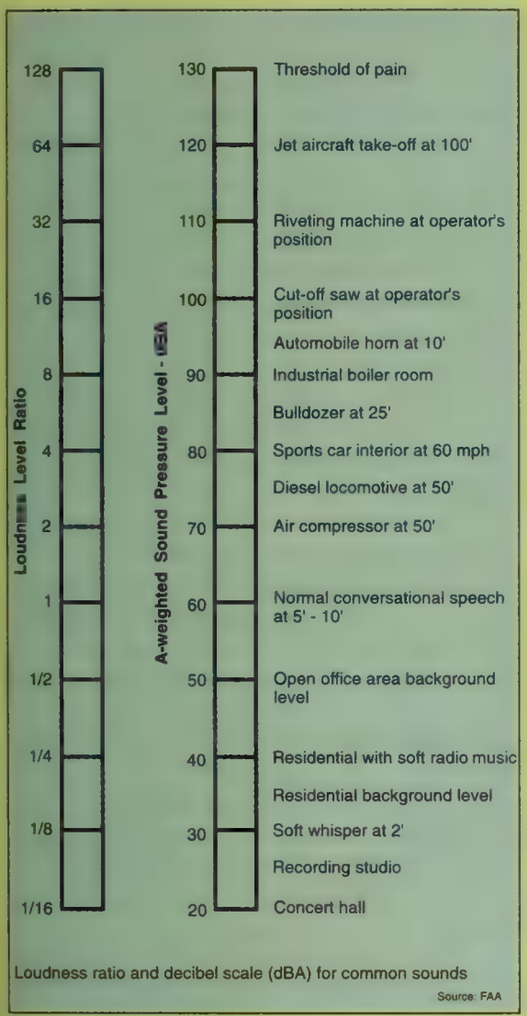
It's also important to specify high-performance windows and doors. The latter should be either solid-core wood, or insulated metal or fiberglass. A good storm door or an entry vestibule reduces noise. Among windows, the rule is the wider the air space between panes, the more sound is attenuated. Many acoustically upgraded windows use a three- to four-in. space to fit standard 2-by-4 stud walls. Four in. is considered the minimum thickness at which low-frequency waves are attenuated. Materials for window sash and frames also matter. Vinyl or aluminum are rigid enough to frame a 4-inch-or-greater air space with sightlines that are acceptably narrow. Laminated glass used for one or both of the lights also reduces noise infiltration, since the laminating interlayer dampens sound. Good weatherstripping is essential, says Dana Hougland, vice president of Denver-based David L. Adams Associates, acoustical consultants. "This is especially true in tight houses where even tiny voids introduce a large noise leak," she explains. She recommends a vinyl or silicone-bulb type material. The main points of infiltration, after





architects Dovolis Johnson & Ruggieri, Inc./Bauknight Associates (above right). Most retrofits involved either replacing windows or improving their acoustics by adding storm windows or acrylic panels.

Retrofitting buildings to reduce the effects of airport noise isn't just a matter of developing appropriate details. Professionals must be keenly aware of tight budgets, locally ordained bidding procedures, and the sensitivities of affected homeowners.



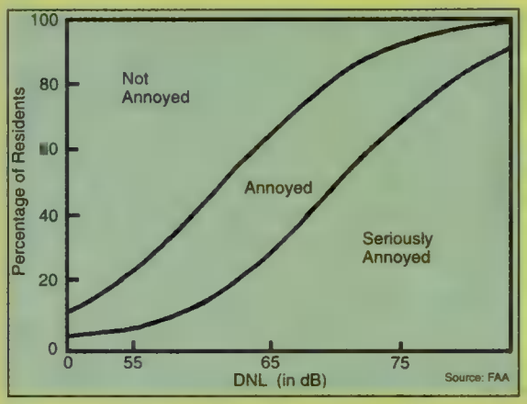
Loudness ratio and decibel scale (dBA) for common sounds

windows and doors, are roof, gable, dryer, and soffit vents, ductwork, and chimneys.

Despite its reputation for reducing noise, extra insulation alone does little to quiet a structure, says Hougland. But because the public perceives it as important, most houses involved in the Stapleton Noise Insulation Program (below) had an extra layer of insulation blown into the attic. "This was done automatically to satisfy the homeowners," she says. Among insulation products, cellulose, fiberglass, or rock wool are acoustically superior to insulation board because of the air spaces in them.

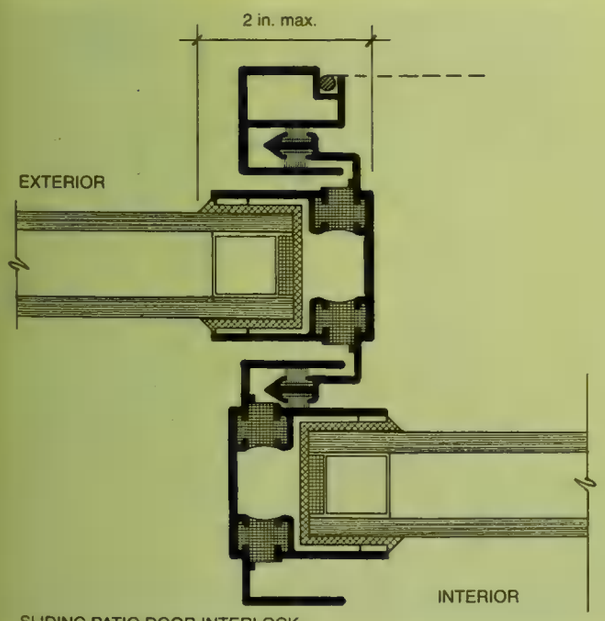
A system for 2,300 houses in Denver

Though the area ultimately built a new, out-of-town airport, several municipalities surrounding Denver's Stapleton International Airport teamed up seven years ago to retrofit homes, schools, and churches close by. Local officials undertook the program without the strings attached to an FAA program, but buildings were selected according to the agency's contour maps. Homes located in areas of 65dB and above, and churches and schools at 70dB and above were eligible. By the program's conclusion, 2,300 homes were retrofitted for noise abatement. Each home was allocated up to $7,500. In turn, residents signed a statement saying

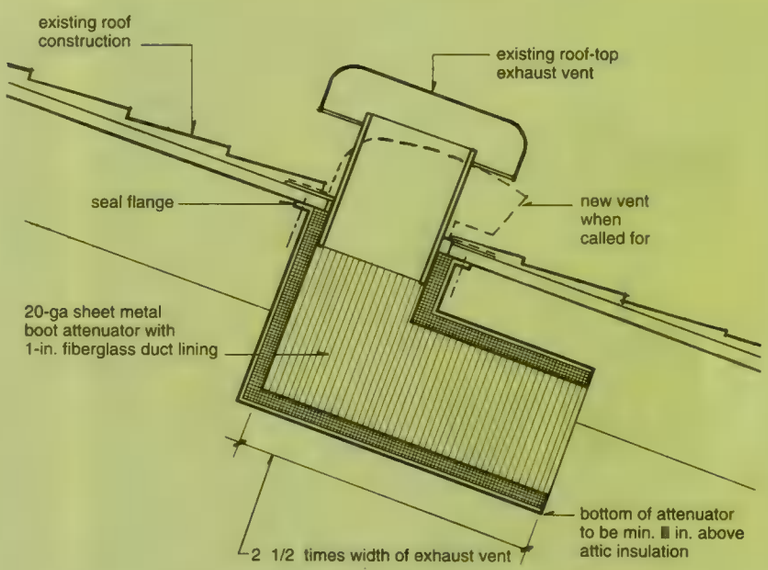


The charts on this page give a sense of the numbers of people harmed by noise and the amount it takes. Noise can cause health problems ranging from hearing loss to heart attacks, birth defects, and stress-related illnesses; experts put the danger level at about 85dB.

Below: details for the Stapleton area program. Eave soffit vents, a noise conduit, are typically sealed off and replaced with roof vents fitted with attenuation boots (below right). They baffle vents without reducing air flow. Typically made of sheet metal, their fiberglass lining and indirect air path absorbs noise. For hvac or other ducts, adding insulation and turns in ductwork may reduce noise infiltration.



SLIDING PATIO DOOR INTERLOCK



SECTION THROUGH ROOF-VENT ATTENUATOR

Jet airplanes' longer, low-frequency sound waves can actually set a flimsy building envelope in motion. These frequencies are most difficult to remedy; short waves are deflected. As a rule, the greater the mass of the building, the less noise will infiltrate.

they wouldn't bring suit against the airport. Working on so many homes at once, with limited funding for each, raised design issues as well as administrative problems. "The question became: how do you create a standardized program to deal with thousands of different homes, each of them unique, on a very limited budget," explains Dana Hougland. "We realized early on that if the residents didn't like the looks of what we were doing, they wouldn't care how much we mitigated the noise."

An important step was to create a decision tree that ranked the major points of noise mitigation. The goal was to decrease noise infiltration by 10dB or more in each home. Paul Hutton, a principal at Hutton Ford Architects in Denver, which managed the architectural side of the Stapleton Noise Insulation Program, explains the process. (His firm succeeded another Denver firm, Muchow & Partners, which folded several years into the project.) "To avoid the cost of surveying each house, the design team came up with a checklist that the city agencies who supervised the work could follow. They could fill out the checklist and come up with their own work orders."

The team, after surveying 80 sample homes, created a detailed manual with standard details to show contractors how to handle every condition, from window replacement to installing evaporative coolers. Once that was complete, the consultants were only contacted to handle special or unique conditions. The project was financed by airport fees and administered through local government agencies, which bid out groups of from 10 to 20 houses. "This wasn't the most exciting stuff design-wise—noise coming in through pet doors is not a glamorous problem. But there were other challenges that made the work intriguing. It expanded our role as architects," Hutton says.

The acousticians felt that conventional Sound Transmission Class ratings allowed too much deviation in frequency bands where aircraft noise is most intrusive. They devised a window specification that required more sound attenuation at lower frequencies, thereby minimizing the difference between performance of windows and walls. "We wanted windows that performed well acoustically, weren't too hard to work, offered decent color selections and security, and were affordable," Hutton says. Officials sought a single source for doors and windows, so manufacturer interest was keen. In the end, window replacement accounted for about 50 percent of the construction cost for most houses. Testing on completed houses verified an average 12dB improvement in A-weighted noise penetration.

The peril of politics in Minneapolis

Funding for the 10-year project in which approximately 10,000 homes in several jurisdictions surrounding the Minneapolis/St. Paul International Airport will be retrofitted by the Metropolitan Airports Commission (MAC) project comes, in part, from FAA Part 150 allocations. "In this case, MAC wanted the homeowners appeased, and the work done quickly," comments Paula Merrigan, project manager with Minneapolis architect Dovolis Johnson & Ruggieri/Bauknight Associates.

The pilot phase was rocky, however. A library of details was worked up by Wyle Acoustical Labs of Washington, and the Minneapolis architecture firm of Meyer Scherer & Rockcastle. According to Merrigan, bidders resented not being able to visit projects, and some found the keynoting system (one that would be familiar to builders of larger, non-residential construction) too complex. She also says that officials opened the first phase to any builder who felt he or she could handle retrofitting 148 homes simultaneously. And each of the several jurisdictions handled the allocation of houses and the schedule differently. As a result, retrofit

© Michael Ian Shopenn photos this page and opposite





Below and opposite: The SeaTac Community Center features a double roof (one made of wood trusses and the other of wood joists), which is tied into accoustically isolated double-stud walls. Exterior walls are solid-grouted concrete block, while the wood-framed interior walls and ceilings feature two layers of 5/8-in. gypsum wall board. The walls are joined with resilient clips which act as springs to help dissipate vibrations.

costs came in much higher than anticipated. Testing on completed houses, which included a variety of scopes of remedial work, convinced MAC and the FAA that simpler methods were adequate to meet noise-reduction criteria.

Subsequent phases are being done with fewer and simpler details (page 32) and a process more familiar to residential builders. Because of their past experience in retrofitting
public housing, Dovolis Johnson & Ruggieri/Bauknight were selected as architects. "We're used to working with cumbersome government money sources, plowing through lots of paperwork, and developing software to store all the information on each home," says Merrigan. The program was coordinated by the Center for Energy and Environment; MAC performs acoustical testing. Now, the project coordinators meet with homeowners and survey each house, making recommendations on what steps will be most effective in reducing noise infiltration. They draw up only a perimeter plan, and provide a materials list and a window and door schedule. The whole process takes about 7.5 hours per house, Merrigan says.

The project manual now includes a large section devoted to contractor bidding procedures and proposals along with FAA-mandated unit prices for specified items. The amount of work done and the amount of money spent on each house is determined by the minimum decibel reduction required by the FAA (5dB). Mechanical engineer ME^2, Inc. assesses hvac systems, adding intake ducts when necessary to make up for fresh-air sources lost as the structure is sealed. A project demonstration house gave residents a preview of what noise mitigation could accomplish, and offered a testing ground for products within real assemblies. The first 148 houses are now complete; a second group of 220 homes were 70 percent complete in late May.

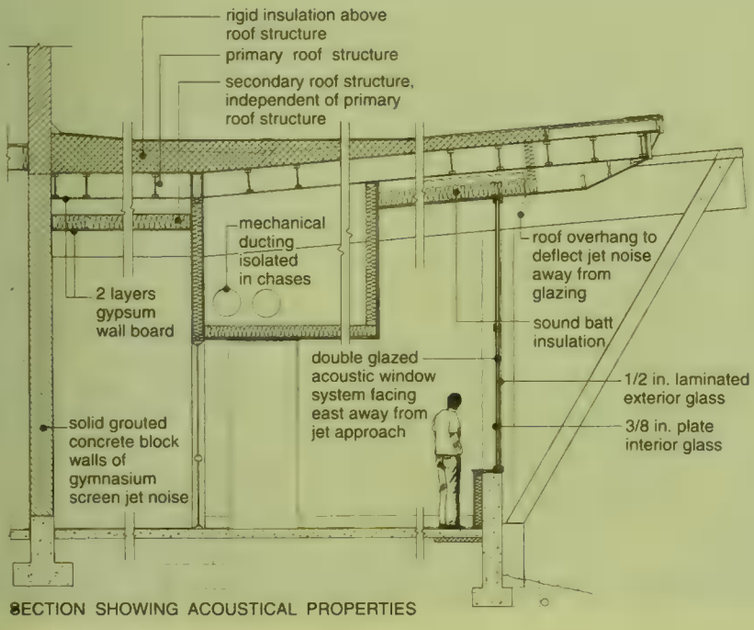
Quieting ■ community center

During a recent meeting at the North Sea Tac Community Center, a citizens' group concluded that neighboring SeaTac Airport had been shut down. (The center was built on land cleared of residences affected by noise from the Seattle area's international airport.) Local residents are so used to the intermittent roar of jets, they notice only when the noise stops, which it had—inside.

Seattle architects Miller/Hull incorporated a range of noise mitigation features in the $2.7-million center so that now, at a location where outside noise levels reach 100dB, interior levels seldom exceed 45 to 50dB. Since a significant amount of jet noise enters through the roof, The Greenbusch Group, acoustical engineers, recommended double roofs, one floating structurally separate above the other, in those areas of the building where quiet is most important. These roofs' mass absorbs sound, abetted by the dividing air space. These techniques "didn't matter in the gym since it was going to be noisy there no matter what we did. But the meeting rooms and the performing areas had to be quiet," says Robert Hull, a principal at Miller/Hull. An entrance vestibule avoids blasts of sound that would otherwise occur when someone opens an entrance door. ■

Further Information

- National Council of Acoustical Consultants
66 Morris Ave., Suite 1A
Springfield, NJ 07081
201/564-5859
- Acoustical Society of America
500 Sunnyside Blvd.
Woodbury, NY 11797
516/349-7800
- *Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations*
Catalog Number: ADA 258594
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
703/487-4650



SECTION SHOWING ACOUSTICAL PROPERTIES



A Slim Tower Packages Multiple Functions

Demanding programmatic and technological needs are elegantly accommodated in a high-density addition to a congested urban medical complex.

By Katherine Kai-sun Chia

Dictated by the confines of an urban site and elaborate internal functional requirements, additions to major medical centers usually result in a chaotic amalgamation of appendages that seems to speak less of a medical "center" than of a series of disjointed parts. What should be a straightforward and simple plan, easily accessible and navigable for doctors and patients alike (especially in emergencies), too often becomes a contorted, often circuitous maze. Such was the state of affairs at the New York University Medical Center, one of the largest health-care facilities in Manhattan.

When, in 1988, the trustees commissioned James Stewart Polshek and Partners to add the Skirball Institute of Biomolecular Medicine and a residential tower for nurses, the firm was determined to give the campus the visual coherence and identity it lacked. The simple, monolithic massing of the new mixed-use, 23-story, 510,000-sq-ft tower is impressive for the economy-of-design means used. Its elegant envelope belies the daunting complexity of the programmatic, functional, and mechanical needs it serves. [For other big additions on tight sites, see RECORD , September 1990, pages 160-163.]

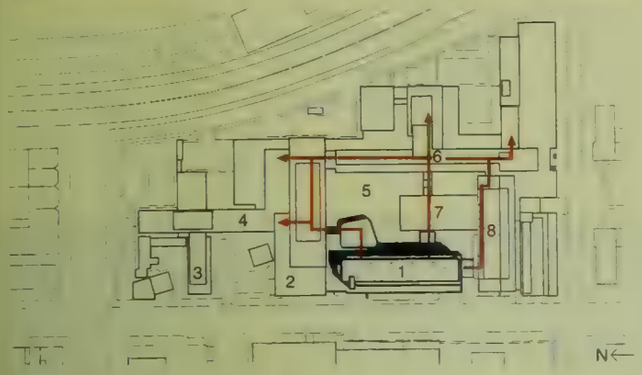
Occupying an irregular four-block site, the campus includes the NYU Medical School, Tisch Hospital, the Arnold and Marie Schwartz Health Care Center, and the Rusk Institute of Rehabilitation Medicine. The nondescript modern brick buildings, constructed between 1957 and 1976 by Skidmore Owings & Merrill and Perkins & Will, were informally organized and interconnected around a drive-in forecourt. The complex lacked an obvious main entrance.

At grade, Polshek has created a grand "front door" that completes the 85-ft-high street wall along First Avenue and marks the entrance to the campus. Patients and staff approach the building from an off-street drop-off area [illegible] aluminum wing-shaped [illegible] (see site plan, opposite). The [illegible] a double-height, glass-walled [illegible] forecourt, serves

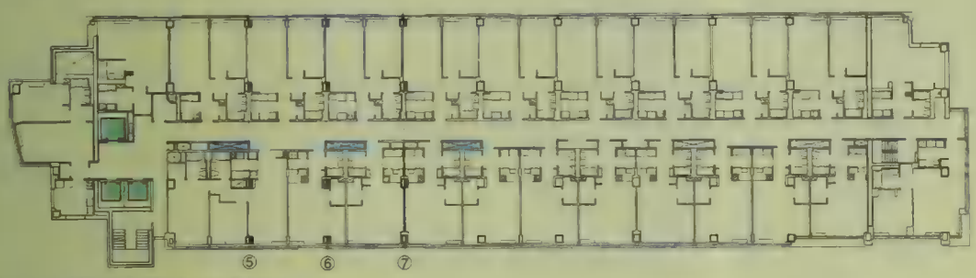
[illegible] practices with the [illegible] lectures on architecture.



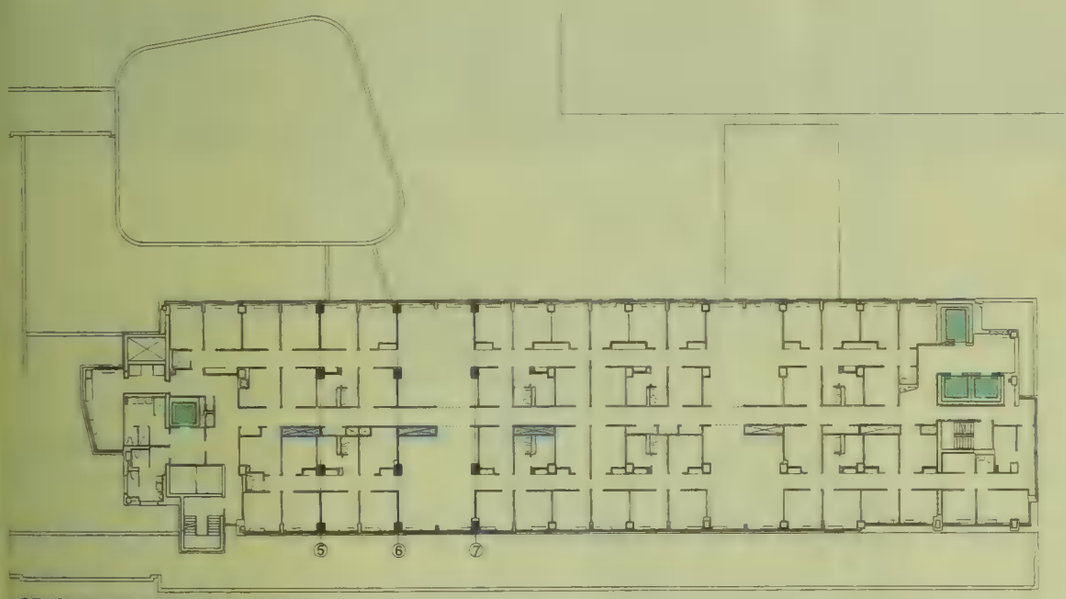
©Jeff Goldberg/Esto photos



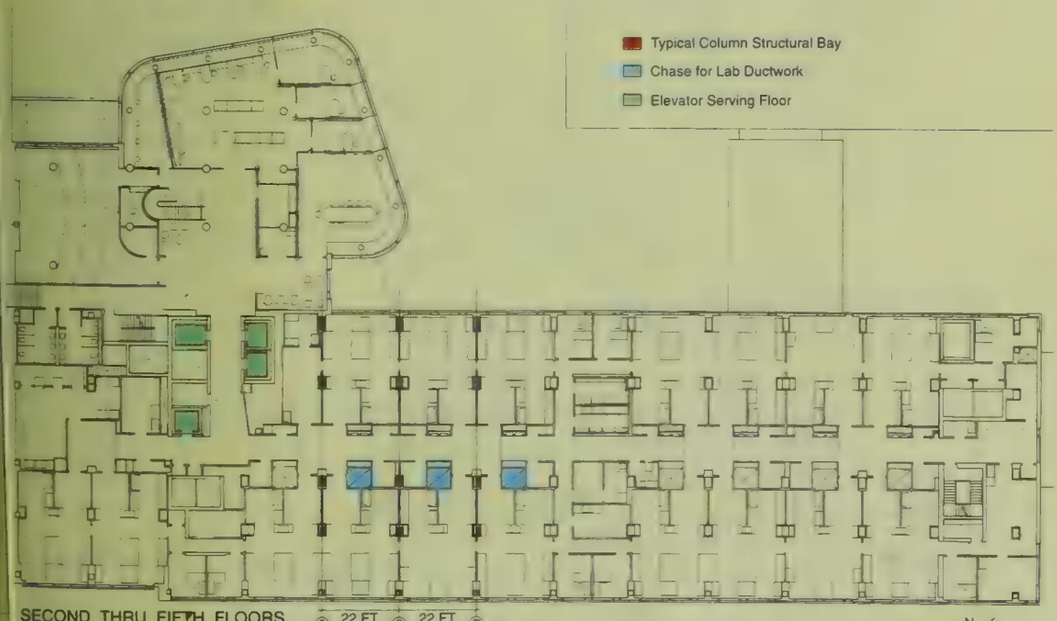
1. *Skirball Institute of Biomolecular Medicine*
2. *Skin and Cancer Unit*
3. *I.R.M. Research Building*
4. *Institute of Rehabilitation Medicine*
5. *New landscaped courtyard*
6. *Medical Science Building*
7. *Alumni Hall*
8. *Health Care Center*



NINTH THRU TWENTY-THIRD FLOORS



SEVENTH AND EIGHTH FLOORS



SECOND THRU FIFTH FLOORS

7,000 people daily and connects the building to the Tisch Hospital, the Medical School, and Alumni Hall from three new hallway links, ramped between 3/4 in. and 4 1/2 in. over a 30- to 37-ft distance to meet varying existing floor levels. The north link opens to an oblong, curvilinear glass-and-aluminum "earlobe," holding the new 4,000-sq-ft waiting and admitting area for the Tisch Hospital on the main level and the administrative offices for the labs above (plans left).

Three typologies; one "organism"

The concourse acts like a filter, providing views from the street to the former forecourt, now an enclosed, landscaped garden. Elevator banks at each end of the concourse separately serve the Institute's laboratories and faculty offices. The residential elevators, located in a separate First Avenue lobby, bypass the office and laboratory floors.

The organization of the tower's stacked functions—laboratories, offices, and housing—is deceptively simple and straightforward. The architect developed a single structural system that would accommodate varying floor plans with minimal load transfers. The 22-ft structural-bay system, adequate for offices and labs, also accepts the 11-ft residential module. "Three typologies were used for one organism," says associate partner Todd Schliemann. In order to provide the floor area for the service and storage needs of approximately 70 researchers, the lab floors extend 15 feet over the first floor drop-off area. Massive beams that "step up" over the lobby transfer the loads back to the primary column system (page 39).

A plan oriented to views and light

Both the office and residential floors shift back to the standard structural bay system, but their central corridors remain offset from the lab corridors below. (This straightforward ward treatment allows 80 12-in.-dia. laboratory fume-hood risers and a separate riser from below-grade animal-holding areas to be gathered along one side of the corridor, forming unobtrusive "thick" service walls. These must penetrate the office and residential floors so they can exhaust from the top of the building for safety.) The lab floors, though deeper than the upper levels, were kept as shallow as possible to let natural light penetrate to desk

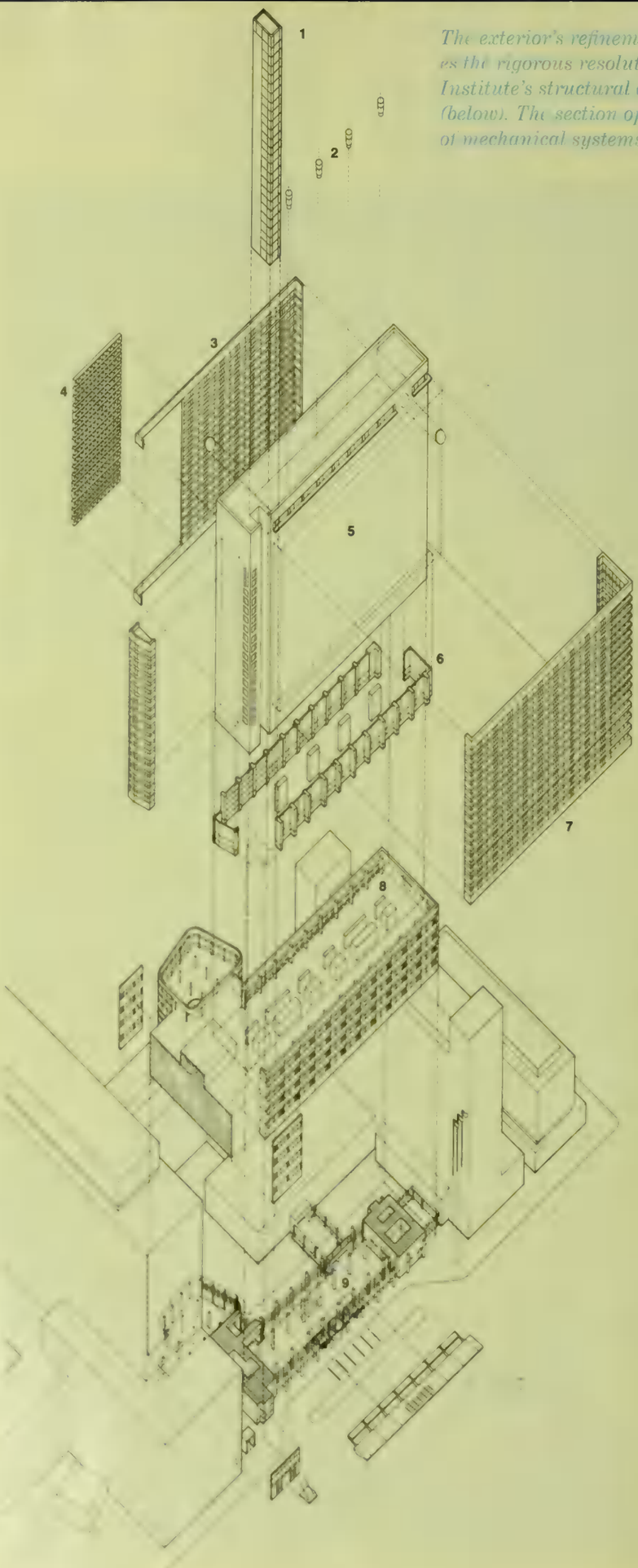
spaces flanking the main corridor. The faculty medical offices, particularly, are a departure from the standard windowless warren of identical exam-room cubicles. Located on floors 7 through 10, they are divided into four suites per floor, typically consisting of 13 rooms, a high percentage with windows, for offices, examination, or consultation. Four secretarial and waiting areas per floor penetrate the building from east to west, giving views to often-anxious waiting patients and family, and bringing natural light into the central corridor.

The residential units on floors 11 to 23 (built to keep valued staff in a city with high housing costs), provide 289 apartments ranging in size from studios to three bedrooms, expanding and contracting on an 11-ft module within the 22-ft column bay.

Designers of similar medical facilities often propose a squarish floor plan, regarded as more efficient because it reduces corridor lengths. The site did not permit Polshek this luxury. Still, the architects make the best of their long slab layout by incorporating internal private corridors parallel to the main corridor in both the labs and medical offices. The suites can expand or contract simply by moving the divisions along these corridors, which offers a great deal of flexibility. On the lab floors, the "filade" device makes multi-lab suites possible, and informally divides the administrative desk spaces and the active research counters.

Threading mechanicals through

Polshek resolves the complex overlapping of mechanical requirements on different floors by splitting the mechanical needs between the topmost bulkhead floors and a double-height mechanical space on the sixth floor, where the change in occupancy between the labs and offices occurs. The sixth floor mechanical room primarily serves the laboratory floors and the mechanical rooms of the lower tier of apartments. The two-level bulkhead at the top of the tower contains the lab fume-hood exhaust fans, vacuum fans (which project and filter any harmful substances from the hoods), into the earth, and mechanical and electrical equipment for the upper tier of apartments. Emergency generators, cooling towers, and electric machine rooms for the



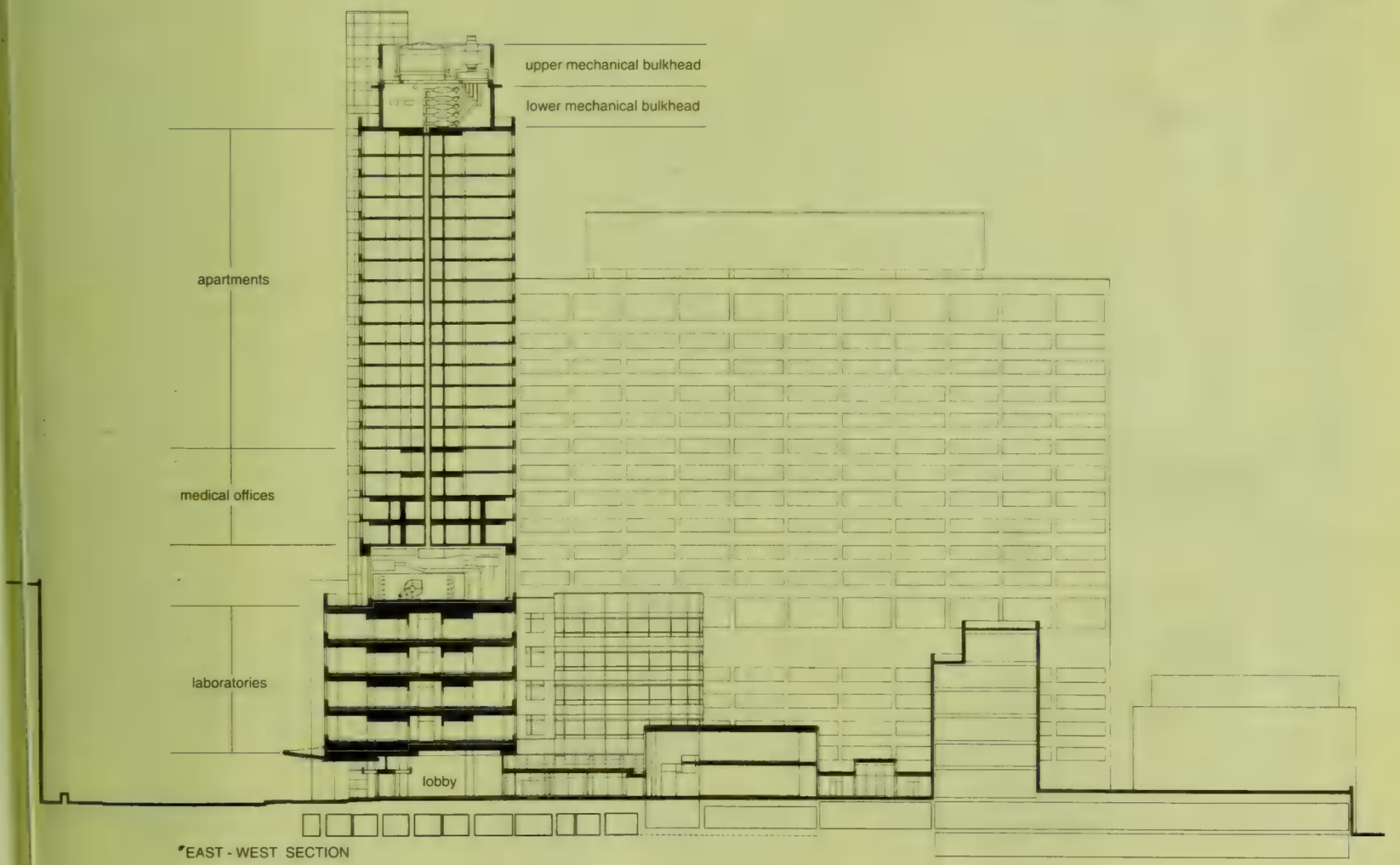
The exterior's refinement (opposite) disguises the rigorous resolution of the Skirball Institute's structural and mechanical needs (below). The section opposite shows the split of mechanical systems. The sixth-floor

1. *Metal-clad projected stair*
2. *Fume-hood exhaust ejectors*
3. *Courtyard-facing curtain wall*
4. *Recessed curtain wall*
5. *Medical office/ residential core*
6. *Mechanical floor and shafts*
7. *First Avenue curtain wall*
8. *Lab core*
9. *Concourse*

mechanical level minimizes piping and duct-work runs for the laboratory air handlers and steamed hot-water pumps. This level also houses the domestic hot-water pumps, electric switch gear, transformers, and utility meters for the offices and lower apartments, and a large chilled-water plant that serves the entire tower and a major portion of the south campus. The lab levels cantilever over the entrance (below right).







EAST - WEST SECTION

The use of metal in the elevations, by creating clean panel-joint reveals and disguising sealant joints, improves upon the often-sloppy look of masonry facades with poorly controlled, soil-collecting, exposed sealants (below). The sixth-floor mechanical space and the bulkhead floors are detailed with operable louvered panels that wrap around the building and mark the major setbacks in the building's facade. Anticipating the even-

entire building share this space.

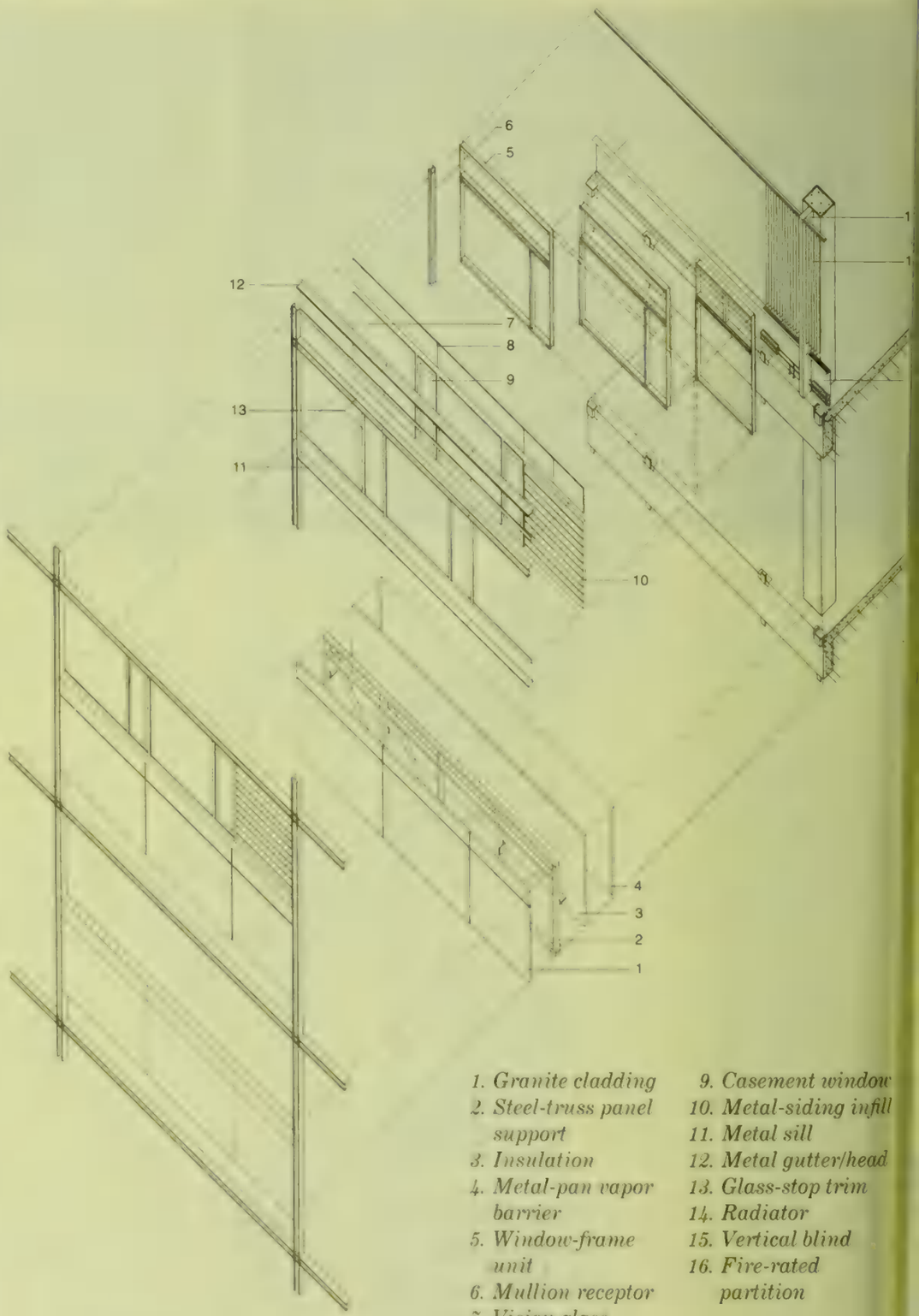
The elevations' kit of parts

The building's elevations discreetly but clearly express both the syncopations of the structural bay system and the floors' various functions (right and opposite). Flame-finished granite spandrels on the lower laboratory floors give way to similarly toned brick above the lab setback. Transom glazing, which drops away at residential floors, expresses the somewhat greater floor-to-floor height of the office levels. Polshek has created elevations that have a lively sculptural presence by manipulating the wall at three scales. The slight recession of glazing, varied at different locations on the facade, is visible from a distance. A grid of custom aluminum extrusions establishes a medium-scale rhythm, and fine joints between masonry panels and between transom glazing set up a finer grain. The system, by simplifying window-to-wall details and through use of a "family" of similar details throughout, was also inexpensive.

Though nurses are moving into their new apartments and researchers are just beginning to set up labs, it's clear NYU's new "front door" is far more welcoming to all.

Credits

Skirball Institute of Biomolecular Medicine
New York City
Owner: *New York University Medical Center*
Architect: *James Stewart Polshek and Partners, Architects–James Stewart Polshek, partner-in-charge; Joseph L. Fleischer, managing partner; Duncan Hazard; Todd Schliemann, associate partners (design); Charles Griffith, David Sherman, James Sinks, Kevin McClurkan, Lynne Bright, Webb Nichols, Hans Kircheis, project team*
Consulting Architect: *Payette Associates (labs)*
Engineers: *Severud Associates (structural); James Hunter & Bolles (mechanical and electrical); Mayer Rutledge (soils)*
Consultants: *Burnnell Rothschild Associates (landscape); Wolfard Company (cost); [illegible] (fountains); [illegible] (curtain wall)*
Construction Manager: *Alfred Dittmar Division of Turner*

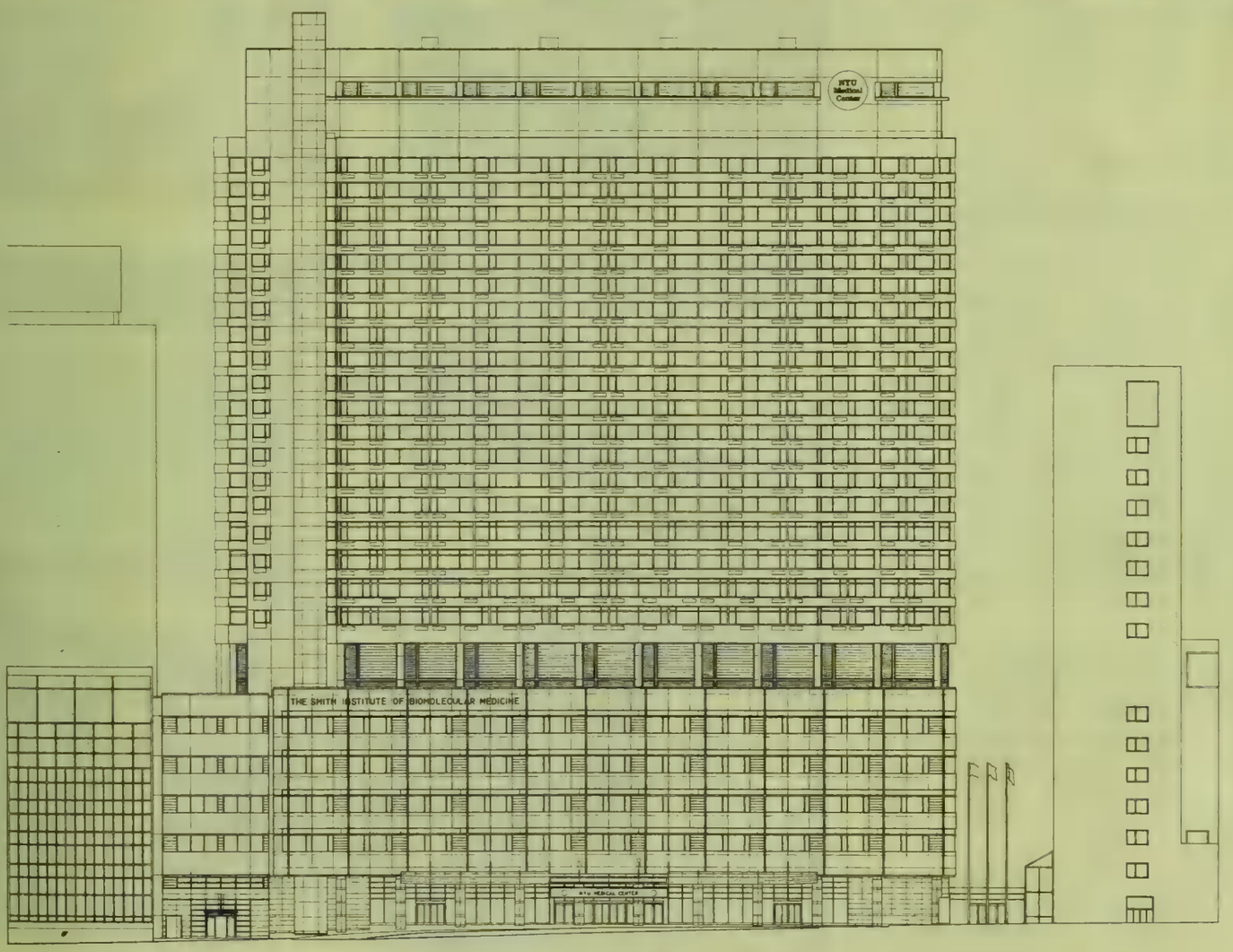


1. *Granite cladding*
2. *Steel-truss panel support*
3. *Insulation*
4. *Metal-pan vapor barrier*
5. *Window-frame unit*
6. *Mullion receptor*
7. *Vision glass*
8. *Structural butt-glazing joint*
9. *Casement window*
10. *Metal-siding infill*
11. *Metal sill*
12. *Metal gutter/head*
13. *Glass-stop trim*
14. *Radiator*
15. *Vertical blind*
16. *Fire-rated partition*

tual installation of new transformers in the former forecourt, Polshek designed the lobby's curtain walls to swing open, allowing a truck to pass through to deliver the components.







WEST ELEVATION

An Architecture-Specific Modeler

DesignWorkShop 1.1

The program reviewed on this page reflects growing attention by vendors to architect-specific functionality in modeling software.

Vendor: Artifice, Inc., P.O. Box 1588, Eugene, OR 97440, 503/345-7421; fax 503/346-3626. $895, includes free unlimited technical support and on-line training. Upgrade to Power Macintosh is $49. Academic and site licenses available.

Equipment required: Macintosh System 7, FPU (math co-processor). Recording walkthroughs and sun studies require QuickTime system extension; 8 MB of random-access memory recommended. We reviewed chiefly on 68040-class Macintoshes, mainly on a slow Centris/Quadra 610 with FPU. We took a quick look at the Power Macintosh version as well.

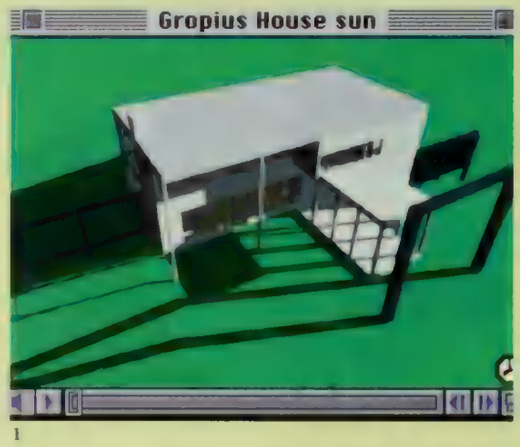
Macintosh owners will find DesignWorkshop an interesting twist on the conventional modeling program. First, it is optimized for architecture. The things that architects do most—cutting holes in walls, laying out beams, adding partitions—are easy to do with DesignWorkshop. Second, DesignWorkshop comes equipped with flexible import and export filters–to and from Architrion, DXF, PICT, Claris CAD, and Radiance formats and to and from 3D and 2D. Third, its tools for shading, walkthroughs, and solar studies are first-rate. You can create a walkthrough or sun-progression *(1)* and shadow animation with ease. The rendering is not photo-realistic, but it can export files to packages that can produce such images. You can also do wireframe, hidden-line, flat-shaded or shadow cast renderings *(2 and 3)*.

You create shapes by drawing them in all three axes at once. The cross-shaped cursor [illegible] the X-Y plane when you move the [illegible] off the button, and in the [illegible] you drag with the mouse [illegible] That's a new concept in 3D [illegible] computer screen.

[illegible] important for some [illegible] DesignWorkshop accept a [illegible] or "adding" another shape. Instead, you zoom in on the area you are editing, moving the mouse and clicking and dragging it below or above the surface you want to modify.

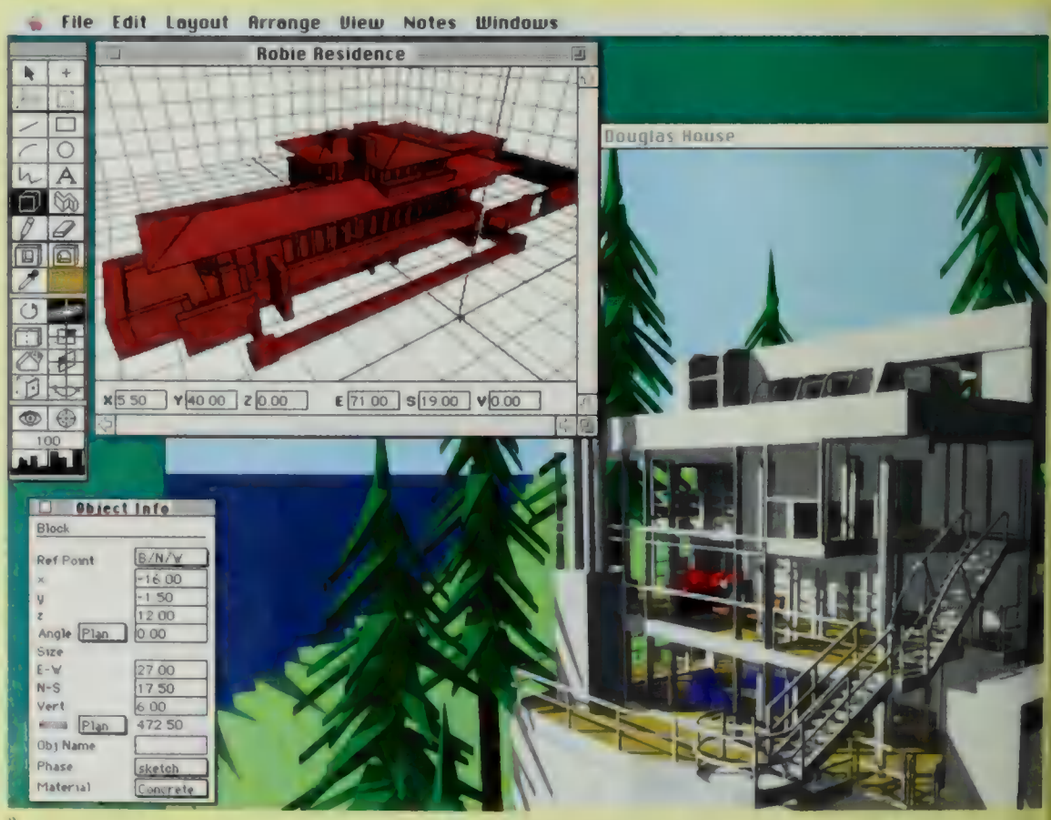
You can zero in on a surface easily and intuitively, by changing the eyepoint (rather than making a view active then rotating it), and you can reorient the coordinate system by clicking on an icon or double-clicking on the face of a surface you want to match. All this allows you to intuitively "edit in 3D," as well as to add models to existing, scanned photographs of existing scenes. The interface works particularly well when you "add" shapes to a surface. Putting a dome on a rectangular structure, for instance, involves nothing more than creating a 2D arc, sweeping it in space to get the dome, and moving it to the rectangle if necessary.

But lack of boolean operators forces extra steps when you want to insert a dome-shaped depression in a wall. First, you cut the surface. Then you create the swept arc—either inside the cut, or some distance



1


2



3

A Handy Mac-PC Converter

away—delete the "right angle" part of the sweep, and put everything together. The insert will size itself to the hole.
Likewise, to create a depressed area, you cut through the existing surface and place a thinner section inside (easy for rectangles), or make a 2D shape with polyline cutouts, extrude it to 3D, and paste it to a thicker, solid slab.

Many "more-cut-out-than-wall" shapes (window-walls, for instance) are easier to build up out of beam-like shapes (they are trivially simple to create, move around, and modify), instead of modeling as solid slabs that are then sculpted–even though slabs and irregular walls ("poly walls" in the program's argot) can be drawn with just one drag-click.

Once a design is laid in–even in 2D–you can overlay it with a sketch that can be handled apart from the drawing.

You can build up "libraries" of shapes and objects simply by saving them as DesignWorkshop files; you can keep as many windows/files open at once as you want. A large set of first-rate architectural, landscaping, and furniture files come with the package.

The bottom line: If your designs have lots of cutouts and etched or hollowed surfaces, this may not be the package for you. But if you only occasionally have to do that, or import such surfaces from other programs, or if you value intuitive interfaces because you only occasionally have to model, DesignWorkshop deserves a close look.

Manuals: One spiral-bound book with installation instructions, reference, and tutorial. There are minor inconsistencies in the manual, and lack of discussion of the excellent libraries included—except to note how they work.
Ease-of-use: Good, once you get used to the "Z-axis" convention.
Error-trapping: Good. When importing DXF files from UNIX or DOS, make sure to select "text with CR only" (that is, no linefeeds at end of file lines). *Steven S. Ross*
300 *on Reader Service Card*

Conversion Plus 2.0

Vendor:
DataViz, Inc., 55 Corp. Drive, Trumbull, CT 06611, 203/268-0030; fax 203/268-4345. $149.
Equipment required:
Computer running Windows 3.1, with 1.44 MB floppy drive and 5 MB of disk space.

Add Conversion Plus to the list of products that can help you move a file from Macintosh to DOS computer or vice-versa. There are two problems that must be overcome to make such moves possible.

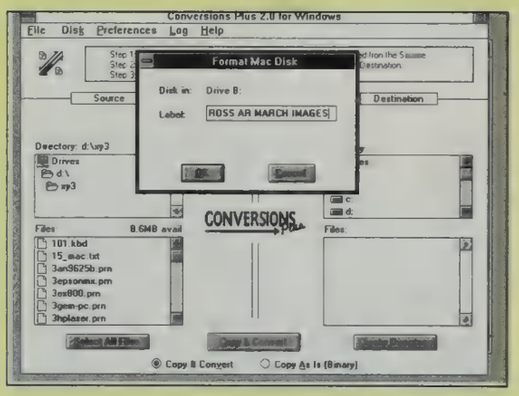
The first is disk formatting—although 3.5-inch disks for the Mac and PCs are physically identical, they store data in different ways. Fortunately, the electronics for high density (HD) 3.5-in. drives are identical in both types of computers. That is, the same drive can format a 1.6 MB disk for the Mac and a 1.44 MB disk for the PC. (Double-density drives, 720K for the PC, 800K for the Mac—are not identical; using them for a transfer requires extra hardware in the PC.)

Macintoshes using System 7 and HD drives are supposed to come with Apple File Exchange (look for it in the System folder). This software allows a Mac to recognize a DOS disk. PC users with HD drives can buy inexpensive add-on software such as Mac-in-Dos from Pacific MicroElectronics to recognize a Mac disk.

Neither program overcomes the second problem in file transfers, however -- The file itself is not changed in any way. It is simply moved to a disk that can be read by the "foreign" computer. DataViz sells software that handles not only the disk recognition but also some file translation.

Conversion Plus works on the PC (MacLinkPlus, a sister product we did not test, works inside the Mac to do about the same thing). It has a memory-resident program that can automatically recognize a Mac disk no matter what other program you are using. Thus, you can be inside WordPerfect on a PC and write the file to a Mac disk.

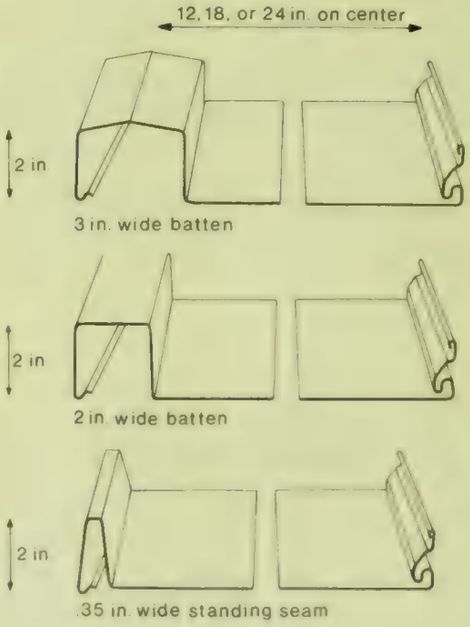
It also has a number of data format conversions built-in, so that when (for instance) text is moved from a DOS program to a Mac program, boldface, underlines, and other niceties are preserved. The conversions work under Windows. They include translations to and from such popular DOS programs as Ami Pro, Word, and WordPerfect to and from Mac programs such as Claris Works, MacWrite, Word and WordPerfect. Many data translations are also possible. Graphics translations are limited (PICT, PICT2, Windows bitmaps and metafiles, and WordPerfect WPG and WPG2), but most CAD packages do the translations within themselves anyway.
Manual: Simple manual for a simple program.
Ease-of-use: Intuitive. You get a strange error message when you try to format a Mac disk; you have to invoke the Drives menu first and specify a drive.
Error-trapping: Make sure you know the proper translation, or whether no translation is needed at all. *S. S. R.*
301 *on Reader Service Card*



Main menu for Conversions Plus 2.0; files to move are on the left side of the screen.

Instant Gratification: Pre-Weathering Gives New Metal an Aged Patina





302. Pre-weathered zinc roofing
Widely used for architectural metal roofing in Europe, zinc weathers over about 10 years of exposure to a dark blue-gray with an attractive, slate-like sheen. Zinc is non-reactive, and panels of the metal are said not to stain surrounding building components with leachate as they weather. Because only aluminum is lower on the galvanic scale, zinc will corrode if installed incorrectly, especially if dissimilar, bare metals are in close proximity to the zinc and water is present. As with any waterproofing component, attention is needed to prevent moisture from being trapped. But care in detailing and selection of roof-system components, and skilled installation, will produce a roof with superior appearance and longevity.

With a plant in Newark, New Jersey, ZED International has been supplying zinc roofing since the '70s. They have developed a proprietary product called Astrazinc, a pre-formed, pre-weathered zinc roof-panel system that accounts for the specific thermal characteristics—expansion and contraction—of zinc, and supplies the metal already weathered to its typical dark gray.

The Hillier Group, Architects, used Astrazinc for the deeply profiled roofs of The Village at Bedminster, a shopping center in New Jersey (top photo). Here the configuration is the HM3 series, a 3-in.-wide slightly gabled batten (top detail). There are also a 2-in.-wide, squared-top batten, and a narrower, standing-seam configuration (.35-in.-wide at the top of the seam).

While proper design and installation can insure a successful low-slope roof, zinc is most appropriate for steeper slopes, where the roof is more visible, and rainwater will wash the surface uniformly and produce an even weathering-out of the patina. ZED supplies pre-weathered or mill-finish zinc pre-formed in the specified panel profile, protected against nicks during transit by a strippable film. The firm also fabricates roof trim, accessories, and flashings in the processed zinc. ZED, Inc., New York City.

A note on metal-roof details
The June 1994 issue of *Professional Roofing* includes an article by Jim Carlson, a deputy director of technology and research with the National Roofing Contractors Association, on the importance of thorough detailing and flashing craftsmanship to the long-term, leak-free performance of any metal-roofing system. Carlson feels that, except for parts of the recently revised SMACNA manual, there are no metal-roofing industry guide documents that contain information on details to suit various conditions in different climates for standing-seam systems. The NRCA Metal Roofing Committee is in the process of producing such a manual. *J. F. B.*



303. Verdigris to go
Revere introduced pre-patinated copper-sheet to the North American market at this year's AIA Convention in Los Angeles. Developed by a Swiss company, the accelerated-aging process quickly—and permanently—transforms the crystaline structure of the surface of the metal, giving brand-new copper the soft green patina of years of exposure to wind and rain.

Called EverGreen, the pre-patinated product will be available in 16- and 20-oz gauges, in sheet up to 3- by 10-ft. These processed sheets can be cut and formed like mill-finish metal; any differentiation at the immediate bends quickly weathers to blend with the overall green coloration. A large European applic tion, the offices and factory for B. Braun Melsungen, by James Stirling, Michael Wilford and Associates, with Walter Nageli, architects [RECORD Oct. 1992, pp. 74-83] remains a consistent green color after more than four years of exposure.

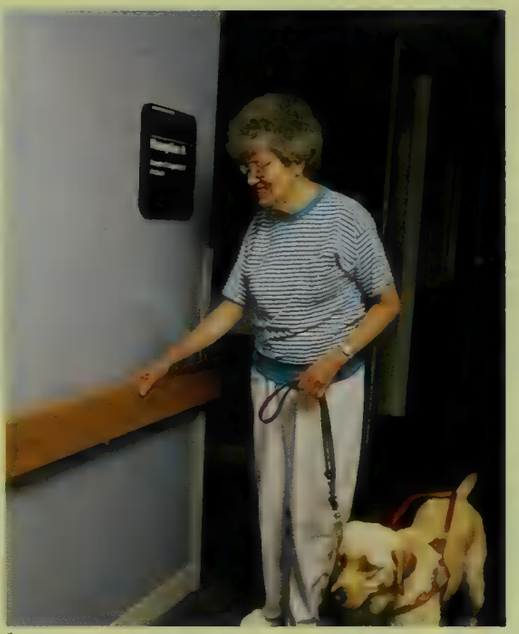
The sheets are appropriate for all exterior surfaces, including sloped, curved, and vertical walls or fascias that normally might weather unevenly. Moshe Safdie and Associates specified pre-patinated copper as cladding on the prominent vertical walls of The Class of 1959 Chapel at Harvard University (left—here, panels were bent to create a shallow pan, and the flanges were set into grooves cut in plywood sheathing.) The copper will be sold from stock at about a $1-per-sq-ft upcharge over mill finish. Revere Copper Products, Inc., Rome, N.Y. ■

Handrail Wayfinding

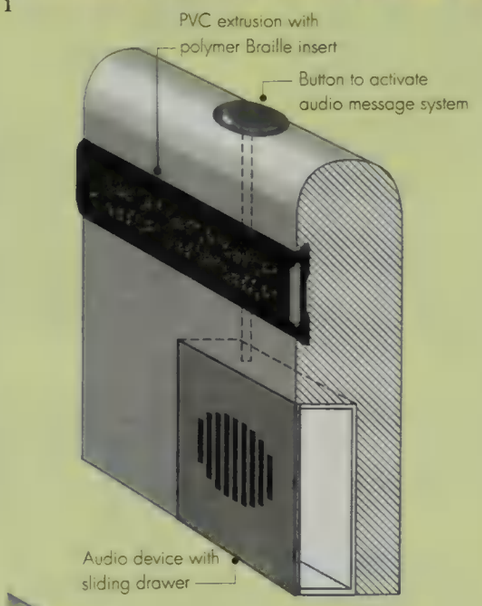
304. Going well beyond the minimum required by Title III of the Americans with Disabilities Act (which calls for identifying all interior doors in public spaces—from electrical closet to boardroom—with uniformly located Braille signage) the Raynes Rail provides comprehensive wayfinding information to the sight-impaired. A PVC extrusion, positioned just where a user's fingertips would contact the inner edge of a handrail, carries crisply produced Braille messages that may describe as much as an entire floor plan and its corridor layout, and could orient the reader to offices, ramps, stairs, and elevators. Developed over two years by graphic designer Coco Raynes, and extensively tested in a full-scale installation at the Massachusetts Eye and Ear Infirmary (1), the system won a Gold Medal in 1994 from the Industrial Designers Society of America. Braille inserts are mounted seamlessly on existing or new handrails with industrial foam tape; audio transmitters can be placed at strategic locations, such as intersections, to provide more detailed information at the touch of a button. These optional units can also direct sighted users—in any language.

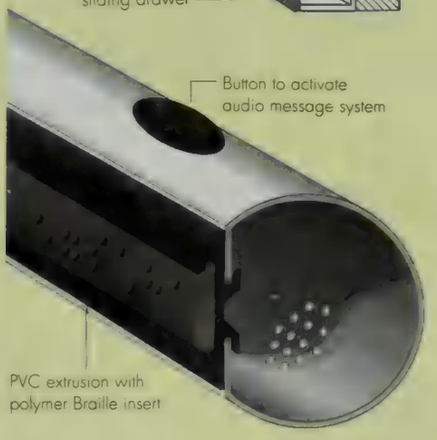
The content of the directional messages is vital to the success of the wayfinding system. Working with Braille consultants (after learning the tactile language herself), Raynes developed a concise descriptive vocabulary for those who cannot see, not just a translation of terms appropriate for sighted persons (doors are "opposite," for example, not "to the left"). Specific directions are extracted from site and floor plans supplied by architects or building owners, and summarized in clearly etched Braille messages on one- or two-inch wide plastic strips.

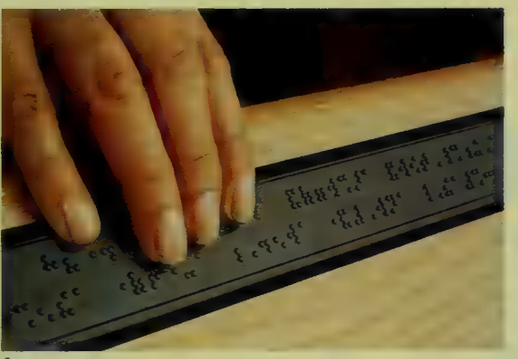
As guide dogs walk on the left side of their owners, the most useful installation would have a rail on both sides of a hall, with information oriented in the direction of a right-handed user. Where wall space is restricted, directional arrows permit use of a two-way system on a single rail. Raynes designed the signage plaques with a beveled edge and recessed back to permit easy installation on existing rails that have a 2 1/2-in. clear depth; the firm also offers rails made for the system. Coco Raynes Associates, Inc., Boston. ■



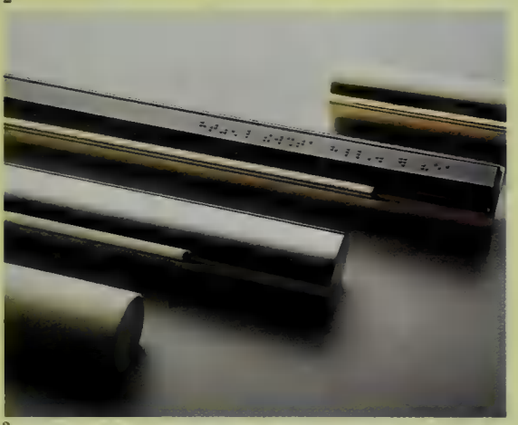
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3



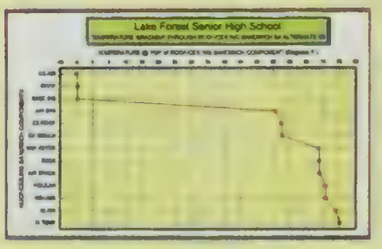
4

Handrail designed especially to accept the Raynes Braille signage and audio components can be supplied in a round profile and several chrome and brass finishes (2, 4), including a powder-coat galvanized rail for exterior use. A deeper rail style made of wood provides wall protection (3). Cutaway details, left, demonstrate installation of the optional audio units in both types of rail.



305. Speedier scanner

The ScanPlus III offers one-pass scanning, which is said to decrease processing time. Four models produce images of varying resolution: 300-, 500-, 800- or 1,000-dots-per-inch. The units are compatible with several computer systems, including Macintosh and IBM. Although an image of any length can be scanned, the maximum width is 36 inches. CalComp, Inc., Scottsdale, Ariz.



306. Roof rating

An industry-sponsored disk of 20,000 roofing samples and eight system types—including built-up, EPDM, and metal—is aimed at predicting the life-time cost and performance of new roofs. Developed by architects, the evaluation is based on original costs, maintenance costs, past performance, and thermal characteristics. Roofing Communications Network, Johns Island, S. C.



307. Awning line grows

Seven striped designs and a 60-inch material-width increase have expanded the flame-retardant Sunbrella Firesist line, adding color options and sizes more appropriate for commercial users. Also for residential use, the fabric is woven of pigmented, flame-resistant, modacrylic yarn. Its fire resistant qualities cannot be washed out. Glen Raven Mills, Inc., Glen Raven, N.C.



308. Novelty house decor

Designer Sallie Trout has introduced a collection featuring house accessories shaped like tadpoles, squiggles, and stars. Included in the line are door handles, towel bars, switchplates, and drawer pulls. Cast in aluminum and manufactured in the United States, these pieces are available in aluminum and gold finishes. Trout Rozenberg, Inc., Venice, Calif.



309. Smooth surfacing

Seamless solid surfacing, custom-made in finished components such as tabletops, is said to lack crevices and to be ideal for quality control in places such as hospitals, laboratories and restaurants. Called Forma, the product also allows for the creation of inlaid tables and three-dimensional designs in a unified composite. TRM, Inc., Huntersville, N.C.



310. Transforming windows

Using liquid-crystal technology, a customizing option allows frosted windows to adopt a clear look at the flip of a switch. The glass clears when an electrical current flows through it and becomes obscure when the current is removed. While the frosted phase reduces ultraviolet rays and sunlight glare, both modes let in the same amount of light. Marvin Windows and Doors, Warroad, Minn.



311. Angular paver

Said to be the only wood-molded paver in the brick industry possessing a beveled edge, the Cushwa Chamfered Paver is designed for a hand-tight, mortarless setting in a sand base. The 4- by 8-inch unit fits common brick-paving designs such as basketweave and herringbone, and is available in colors that match face brick. Redland Brick, Inc., Williamsport, Md.



312. Rounding corners

The Encurve finishing unit is adding a curve to glassblock design. Instead of four squared edges, this shape possesses two squared and two rounded sides. The piece can finish glassblock walls, partitions, counters, showers, windows, and stairwells. It measures 7 3/4 by 7 3/4 by 3 7/8 inches. Pittsburgh Corning, Pittsburgh.

Short takes

Pink Panther goes Brit

Owens-Corning recently paid $110 million for U.K.-based Pilkington Insulation Limited and Kitsons Insulation Products, a distributor. Britain's largest maker of fiber glass and rock wool and a major supplier of thermal and insulation products, the two companies reported $125 million in sales for the fiscal year that ended March 31. The goal of the new entity, known as Owens-Corning Building Products (U.K.) Ltd., is to reach $5 billion in annual sales by the year 2000. This acquisition follows the recent purchase by Owens-Corning of UC Industries, a New Jersey-based producer of pink extruded polystyrene foam.

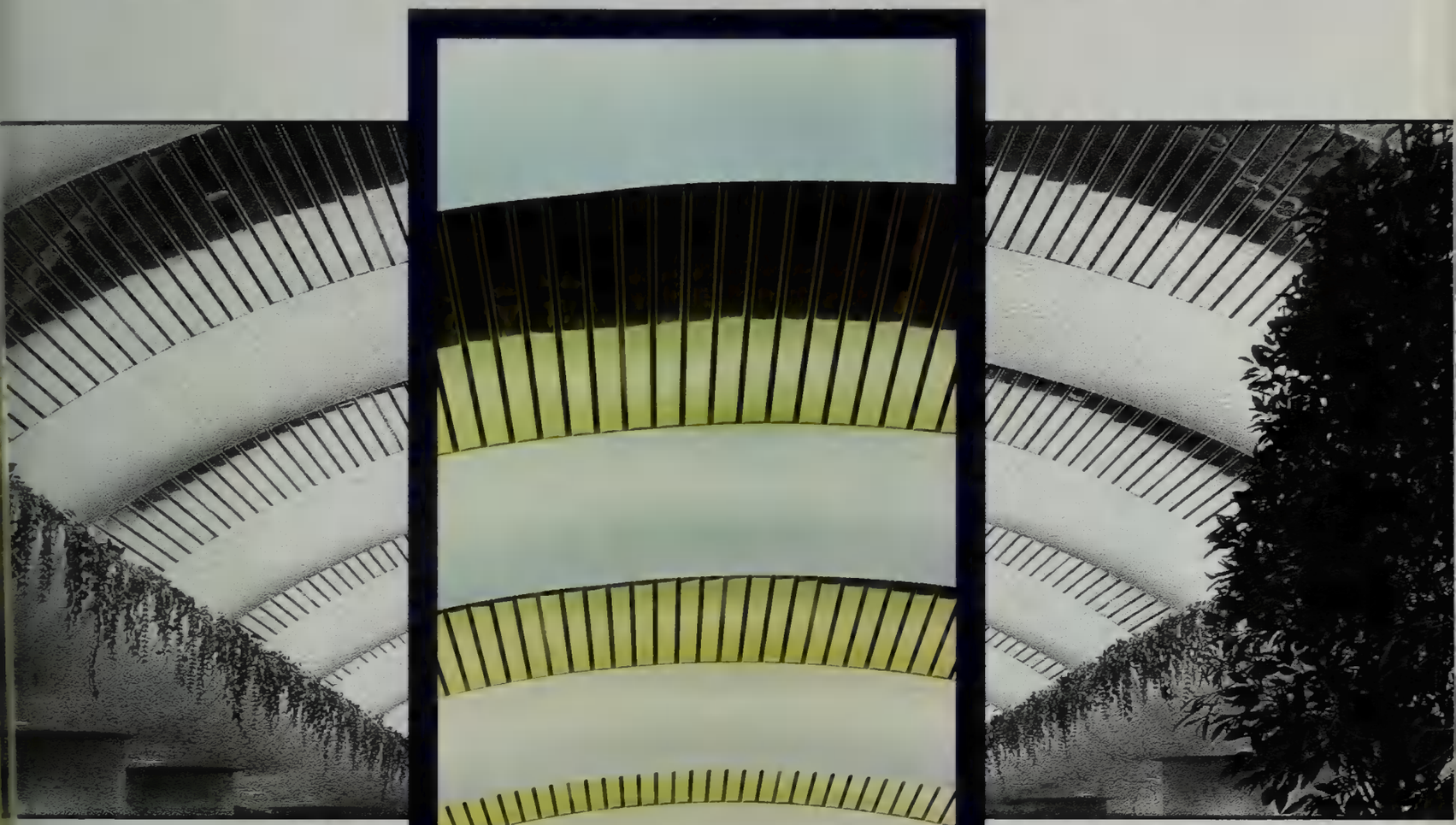
Gas power beats heat

York International of York, Pa. is marketing air conditioners powered by natural gas. The system comprises a single-cylinder, natural gas engine that drives a compressor. The unit's cooling efficiency is about 15.6 SEER, comparable to some of the latest electric heat pumps.

Landscaping rents space

Attractive gardening may be responsible for increases in building occupancy rates, according to a survey cited by Genflex Roofing Systems. Data showed the relationship between the two to have a higher correlation than any other criteria evaluated.

What's The New Name For ALCAN Metal Ceiling Products?



That's right! And its not just a *new name.* Chicago Metallic has purchased the Alcan Ceiling business and created a new, focused division — Interfinish. It will represent a *new concept* for ceiling design quality, service and selection. The entire family of Alcan metal ceiling products . . . proven products such as Planar®, Magnagrid™, Metaline™ and Beamgrid™, are now available from Interfinish. The products haven't changed, but the concept and name have.

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...ASID, IBD, founder of Wilson & Associates, Dallas, Texas. Recently inducted into the 1993 Interior ... Hall of Fame for her stunning work in hospitality design, she is a specifier of DuPont Antron carpet fiber.

TRISHA WILSON

ON COLOR & INNOVATION

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with colors you've never seen before.

Colors are thought waves.

If we're sensitive enough to pick them up,

we can train our eyes to catch them—

even if they're just ever so briefly in our sights.

Once I saw the most magnificent color

on a lion running through the bush

with the morning light bouncing off his mane.

I used that color for the interior of a building that perhaps

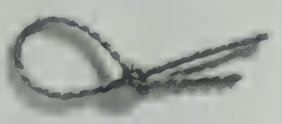
could not exist anywhere—except in our imaginations.

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BROOKS BROTHER
DALLAS, TEXAS

The common link to three of the following four projects is the word *hope*. It unites projects as different as a cathedral in Nicaragua, a decaying Los Angeles neighborhood, and a hospice in Minneapolis. The new Roman Catholic cathedral in Managua, situated suggestively at the city's grubby center as a symbol of faith and trust for a deprived people ("Where the Streets Have No Name," Ricardo Legoretta, architect, page 70), is also a tale of significant private U.S. involvement. A far cry from Managua but just as much an expression of faith, is the story of Culver City ("Urbane Renewal," page 62). Here a dedicated team of architect and developer (Eric Owen Moss and Frederick Smith) take a decaying industrial neighborhood of Los Angeles and, through a fresh mix of planning and esthetic concern, lay the groundwork for the new workplace needs of a new workforce. Hope, too, marks Minneapolis Pathways, a friendly place of spiritual healing for the seriously ill ("Place of Healing," Anmahian Winton, design architects, page 78). Rounding out this section is the southern headquarters for USAA Company, a large insurance concern, ("USAA Today," Spillis Candela, architects, page 56) in a scheme that skillfully manipulates light and space.

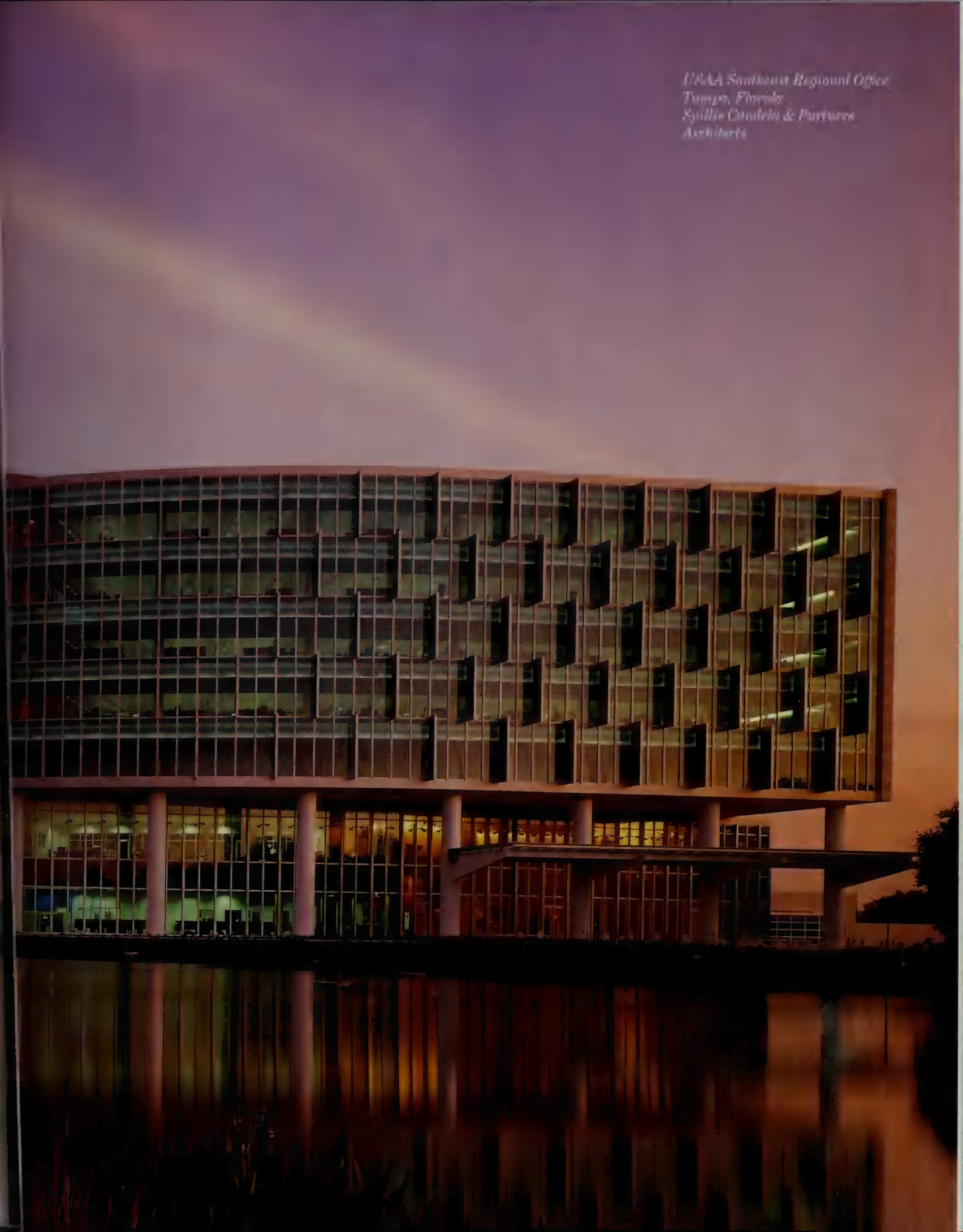
For the second year, RECORD presents its Pacific Rim Supplement (following page 84). It includes a roundup on doing business in each of 13 nations, three features (Kansai Airport in Osaka, four high-rises in China, and a bank in Jakarta), and a guide to the cultural subtleties that can make the difference between a project lost and a project won. *S. A. K.*

Manufacturers' Sources listed on page 89

USAA Today

A close working relationship with client, contractor, and city, coupled with an arduous design process, produces a building of unusual amenity





VFAA Southeast Regional Office
Tampa, Florida
Spillis Candela & Partners
Architects

A company's relocation from downtown to the outskirts inevitably raises the specter of abandoned urban cohesion and suburban sprawl. But the managers and many of the 1,400 employees of the USAA insurance company's Southeastern Regional Office clearly think its recent move from the center of Tampa to a nearby 128-acre forested tract was right for them. And indeed, both client and architect have carried this out with a good measure of environmental sensitivity. A lake fills a "borrow" pit left after fill was removed for construction of a nearby highway. Much of the surrounding cypress wetlands and old-growth oak remains where it stood. Obstructing oaks were transplanted. Any filled wetlands have been replaced with one-and-a-half more area—partially by building up shallows in the lake. The woods are home to wild boar and bobcats and the lake to fish, otter, and alligators. HCB Contractors produced a video on the site's ecology and every workman had to sign an agreement to honor it.

In moving to the wide open spaces, the regional office follows the model of its central headquarters outside San Antonio, which, when built some 20 years ago, was the largest low-rise office building after the Pentagon. Founded as the United Services Automobile Association, the company now serves many insurance needs for active and former military personnel and their dependents. It ranks fourth in size among U.S. home insurers. Not surprisingly for such a large company, it has numerous standards that it applies to all its regional offices. Among them are maximum vibration tolerances, required height clearances and area clearances around mechanical equipment for servicing, and an open-office furniture system with built-in above-floor utility distribution raceways. These are aligned in lengths of 44 to 52 feet, optimum for the company's frequent cable redistribution to meet ever-changing organizational and updating needs.

Programming a building like this was no easy matter. In fact, it began in 1987, when Spillis Candela first came on board, and went through four distinct versions. Partners Hilario Candela and Michael Kerwin, along with their design team, faced early design quandaries that included meeting minimum space and structural standards while keeping overall square footage (and costs) down (see Up Close). A decision to increase the size of the building by almost a quarter to 535,000 square feet without increasing costs meant a total redesign. While USAA declines to reveal construction costs, it is clear from the great effort that went into cost control that the company got its money's worth. Unusual features in the seven-story building include almost two entire floors devoted to support functions and employee amenities. Maintenance of everything from furniture to vehicles is done on site. There are extensive physical-fitness facilities both inside and out. A particular challenge was a 1,600-space parking garage that could empty fast for a staff of mostly working mothers eager to get home. The solution was a structure parallel to the offices for easy access and straight high-speed exit ramps.

A good part of the project's success was due to a close working relationship among architect, contractor, client, and city. Early on, the mayor assigned a team of building officials to assure that design met requirements before time for approvals. Builder HCB came on board at the start of construction documents and gave constant input on [illegible] Spillis Candela project manager Barbara White's words, "buildability and availability." Not the least of the latter concerns was the extensive use of precast concrete, including the [illegible] the lobby cantilever stair, which, after much coaxing by [illegible] arrived at the site in one massive piece. All parties met at the [illegible] every two weeks. "It was draining," she recalls, "but [illegible] to problem-solving." *Charles K. Hoyt*

© Nick Merrick/Hedrich-Blessing

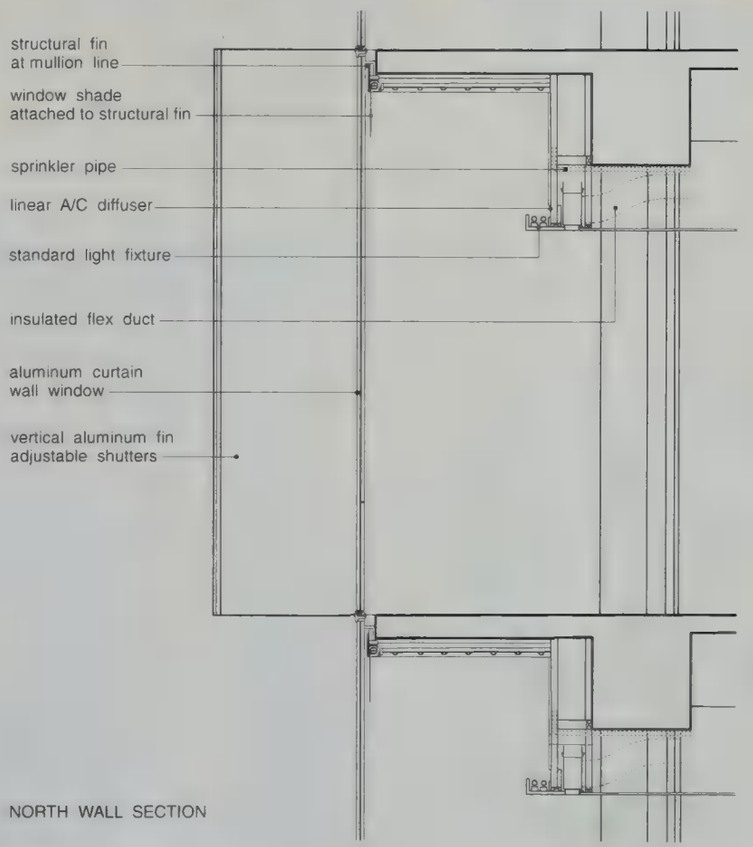






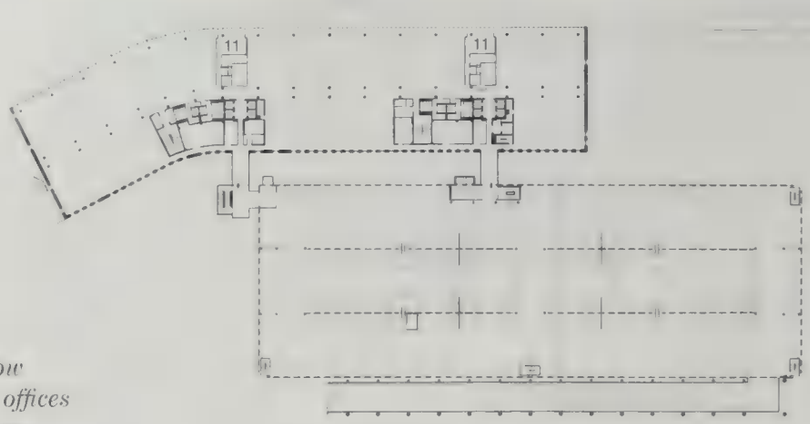
Up Close

Stress on precast. To find an optimum floor plate and structure that would best accommodate USAA's office-furniture modules with a minimum of cost and enough strength to meet maximum vibration requirements, engineer Josefina Martinez tested numerous computer models to arrive at precast prestressed joists. These meet at a double row of columns down the center of the floors that define open office spaces and form natural corridors. Garage floors are precast double Ts with a steep structural camber. The architects adapted standard precast "ladder" columns in the garage to form the supporting square-grid outer walls by adding stepped haunches. Exceptional surface regularity of striated precast panels on other walls was achieved with metal forms lined with rounded wood ribs, which had to be resealed after every pour. Punched windows on the office block are aligned in a pattern that designer Michael Kerwin refers to as "ordered randomness."



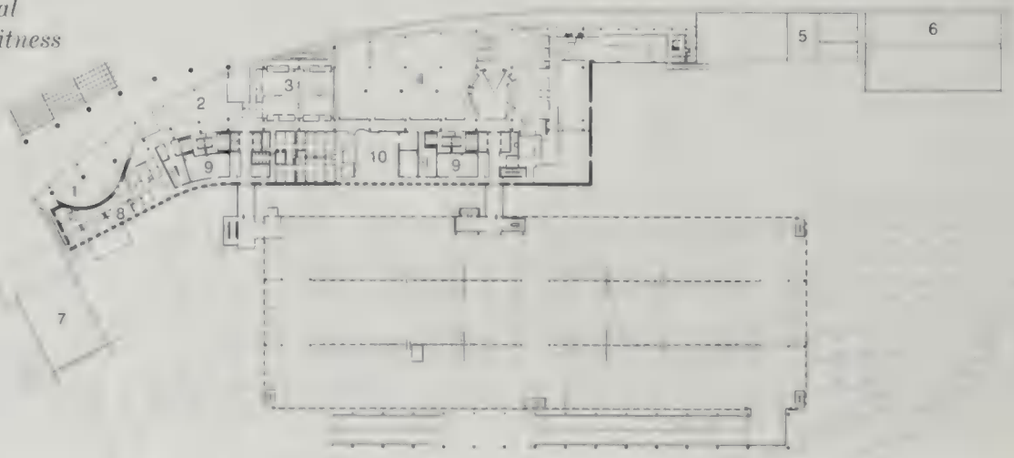
NORTH WALL SECTION

Windows on all sides are deeply recessed for sun screening except on the north wall, where they run floor to ceiling (section) to provide spectacular views of the lake. Vertical fins on the part of this wall that bends from true north project at progressive widths to block late-afternoon western sun. The architects convinced the client that the 10-foot ceilings were worth the cost in such large spaces by building a mockup of workstations with their four-foot partitions in empty space in their own building.



TYPICAL OFFICE FLOOR

1. *Lobby below*
2. *Executive offices*
3. *Auditorium*
4. *Cafeteria*
5. *A.C. towers*
6. *Maintenance*
7. *Drive-in claims*
8. *Medical*
9. *Mechanical*
10. *Physical fitness*
11. *Lounge*



MAIN FLOOR

100 FT.
30 M.
N

Credits

United Services Automobile Association
Southeast Regional Office
Tampa, Florida

Architect: *Spillis Candela & Partners—Hilario F. Candela, partner-in-charge; Michael Kerwin, project designer and partner; Ferron W. Stowe, project director; Barbara A. White, project manager; Angel Macias, project architect; Ana B. Valdes, project architect, CADD; Donald Martin, site representative; Steve P. Berler, designer; Dean K. Newberry, interior-architecture and programming partner; Luis Francisco Hernandez, interior-architecture designer; Lorenzo Cobiella, interior-architecture project manager*

Engineers: *Dames & Moore (civil and landscape); Walter P. Moore and Associates, Inc. (structural); Tilden Lobnitz & Cooper, Inc. (mechanical, electrical, plumbing, and fire protection)*

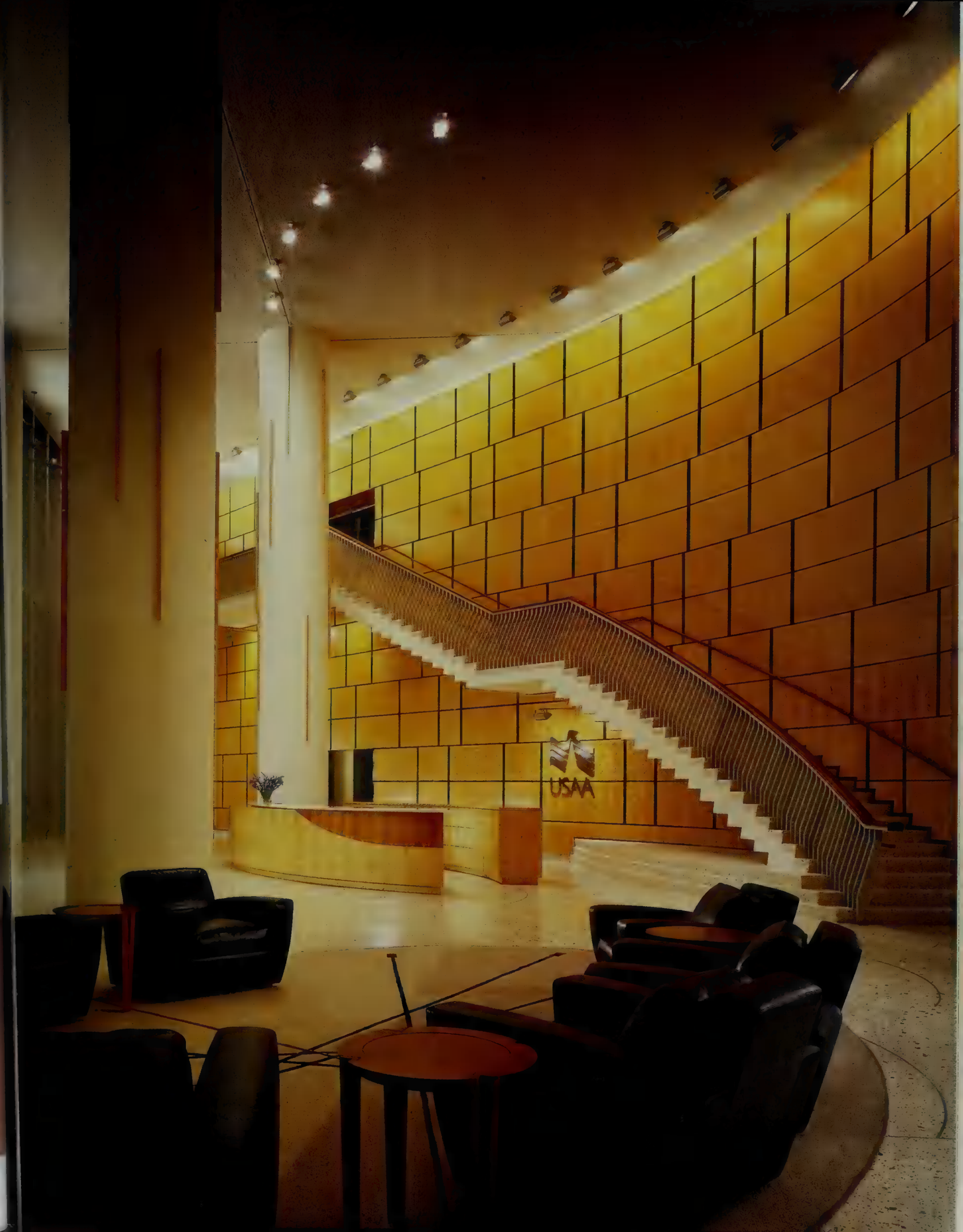
Consultants: *Laschober & Sovich, Inc. (food service); The Design Office of Steve Neumann & Friends (graphics)*

USAA Representatives: *Ronald C. Roeder, project manager; Bob Crittenden, Project Control*

General Contractor: *HCB Contractors*






USAA

Urbane Renewal

A visionary architect-developer team shows how old industrial neighborhoods can be redeveloped to house small-scale, high-tech enterprises.

Sometimes the visual delights of creative forms are only the evidence of a different phenomenon: a change in the way we live and work in our cities. A case in point: in the middle of the sprawling landscape of anonymous, one-story industrial buildings that make up the real Los Angeles, architect Eric Owen Moss has created eruptions of fragmented forms that beckon the passerby while they slice open the buildings to let light spill into the workspaces. These are not one-off boutiques of high design, but homes to a burgeoning community of creative service industries that do not feel at home in the world of corporate office parks. By providing what he calls the "erogenous hook" for the renovation of a half-dozen industrial buildings, Moss has helped developers Frederick Norton Smith and Laurie Smith create an alternative to that standard.

When Frederick Smith inherited his father's holdings in an old industrial area in Culver City known as the Hayden Tract in 1988, he brought to the buildings a developer's instinct honed in Silicon Valley, where he had helped to create buildings for computer start-up companies. In developing those buildings, he came to realize that the creative minds fueling the new information-based economy were often stuck in bland buildings with stultifying atmospheres. It led him to muse about the larger relationship between the world of the body and the world of the mind. "All the seeds of our discontent and economic failure," he claims, "lie in the absence of esthetics in our community. Without such esthetics, people become disconnected. In our society, science leads, but science doesn't have its own esthetics. I saw architecture as a way to create a community that can solve social problems."

Smith went looking for an architect to fulfill his vision, and after interviewing "over a dozen architects" came across Moss when he went to collect rent from him. The architect was reading T. S. Eliot. Smith asked Moss to design a building for him over a right-of-way, then asked him to renovate an old laundry building. The two have been working together ever since. "This guy is not just an idealist," Moss is quick to point out. "It's just that some people smoke it, but he actually writes the checks. He is reinventing himself as he goes along, and is changing the whole development game."

The Moss-Smith strategy may or may not have anything to do with science, community, or smoke and mirrors, but it makes sense. They take buildings that have a heroic scale, a gritty and layered structure, and a great deal of flexibility, but that have outlived their original purpose. Moss then carefully cuts up the spaces to reduce the scale, highlighting the original structure selectively by exposing it in fragments, and then uses the repetitive structural module to create offices. The result is a richly varied interior landscape that is considerably more lively, and at costs that range from $40 to $70 per square foot, economically competitive with office spaces in standard commercial developments.

The buildings of the Hayden Tract have filled up with designers, market researchers, software developers, record companies, and other small- and medium-sized firms that exist by virtue of their entrepreneurial creativity. It is exactly these kinds of companies that economists like Secretary of Labor Robert Reich say will reinvigorate the Los Angeles economy as the aerospace industry that originally supported its factories continues to decline. These are firms that also benefit from the "out-sourcing" of creative tasks: they are cottage industries that serve many clients and can adapt themselves quickly to the marketplace. For such new craftsmen on the technological frontier, the Hayden Tract is a natural home. Filled with all the nostalgia and flexibility of a loft, it is only 10 minutes away from some of the trendiest lunch spots in the country. Smith makes no claims to having consciously caught this wave. He prides himself only on coming up with "new financial instruments" that exploit the changes in capital

© Tom Bonner photos this page



1. 8522 National Boulevard Complex (exterior): phase I, 1986-1988. [RECORD April 198x, page xxx].



2. 8522 National Boulevard Complex (interior): phase I, 1986-1988.



3. Goalen Group, part of 8522 National Boulevard Complex, phase II, 1988-1990.



4. Gary Group, 1988-1991 [RECORD March 1991, pages 106-113].

Shown below are the buildings Moss has designed for the Smiths, most located in an area called the Hayden Tract, the largest remaining industrial area on Los Angeles' west side.

1. Ince Theatre
2. Gary Group
3. G.E.M.
4. Paramount Laundry
5. Lindblade Tower
6. Hercules Theatre and Offices
7. 1R, 2R, 3R Theatre
8. Hayden Tower
9. Warner Avenue
10. S.P.A.R. City
11. Samitaur I and II
12. 3540 Hayden Avenue
13. 8520 National (The Box)
14. 8522 National
15. I.R.S. Records

markets that go with the entrepreneurial business climate. He refuses "to give away all my secrets. Let's just say that the trick is that these are not real-estate loans." According to some of his competitors, Smith has stitched together seat-of-the-pants financing from special funds earmarked by banks for community development, non-real-estate loans, and conventional refinancing of his existing properties. Smith plans to expand his renovations in the tract to 600,000 square feet in the first phase. Without speculating about when he will reach that target, he points out that an additional 70,000 square feet are currently being added to the existing 200,000 square feet of already renovated buildings.

Though skeptical initially, Culver City officials have become wholehearted supporters of Smith and his strange designs. City Planner Mark Winogrond has proposed that the Tract become an "architects' free zone" where, within a given envelope, "no additional discretionary, design, or environmental reviews will be necessary—it will be an area where architectural experimentation will be encouraged." In April the City Council voted to allow Moss's architectural gestures to count toward the City's one-percent-for-art-statute. This is "not to say that architecture is art," says Moss, "but that we should want something better than a Band Aid of art."

The buildings in the Hayden Tract are undoubtedly places of experimentation. Filled with a sense of light, connectedness, rich textures, ordered complexity, and unexpected juxtapositions, they move, as Moss puts it, "from what we know towards what we don't" not by imposing an abstract development or esthetic plan on peoples' lives, but through "anarchic planning—first you do one thing, then another." Out of this fusion of art, science, ad hoc responses to buildings, and market forces comes the architecture of a renewed and self-renewing urbanism. *Aaron Betsky*



© Robert J. Lung and Associates photo

© Grant Mudford photo



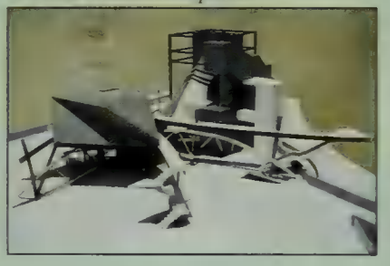
5. SMA Offices, part of 8522 National Boulevard, phase III, 1988-1990.

© Paul H. Groh photo



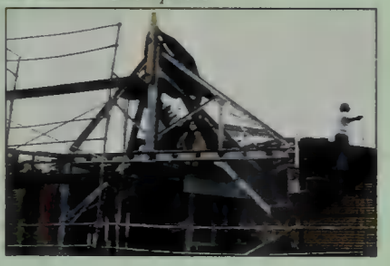
6. The Box, 8520 National Boulevard, completed this month.

© Todd Conversano photo



7. Hayden Tower, 1991—ongoing.

© Paul H. Groh photo

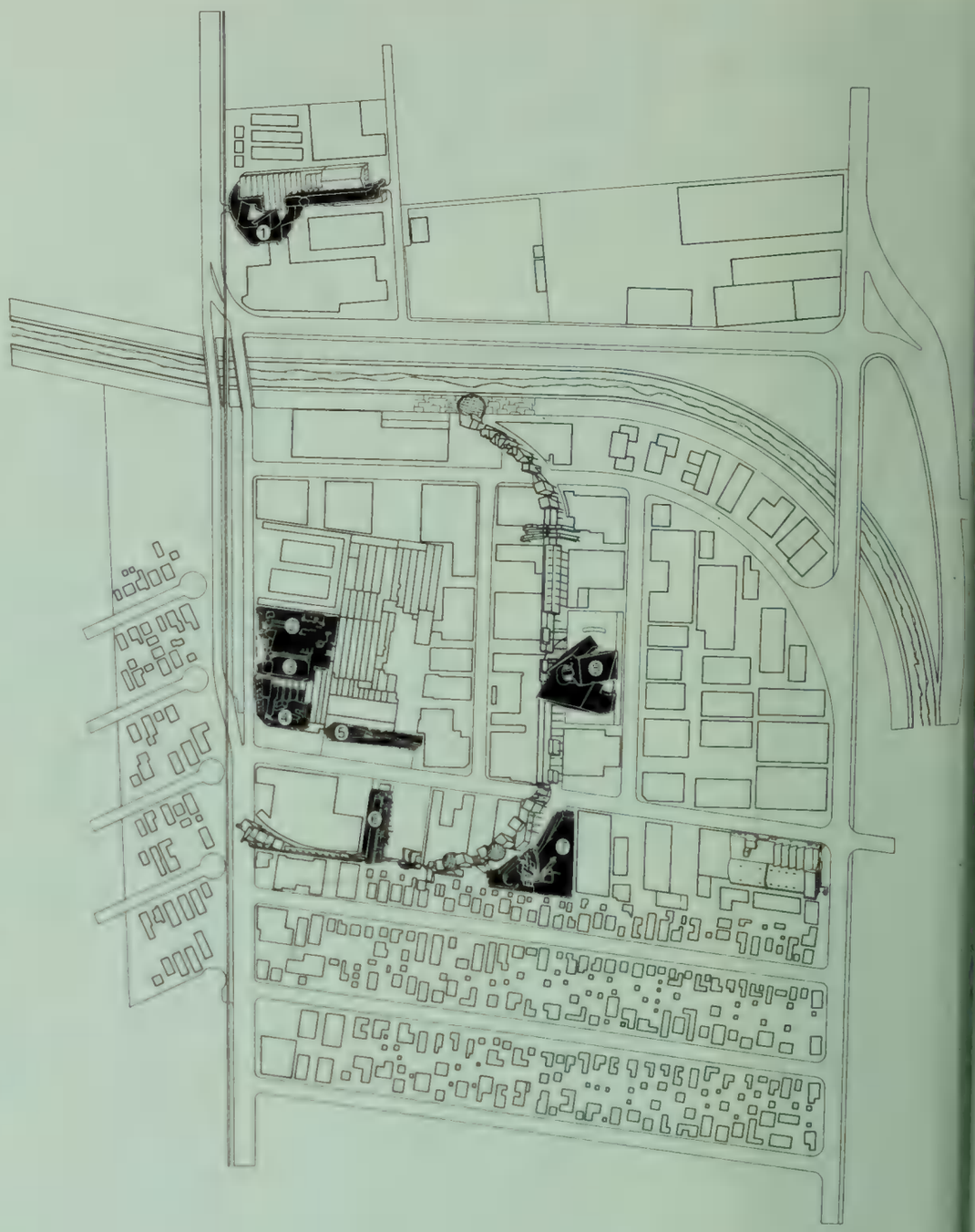


8. IRS Records, completed this month.

S.P.A.R. City

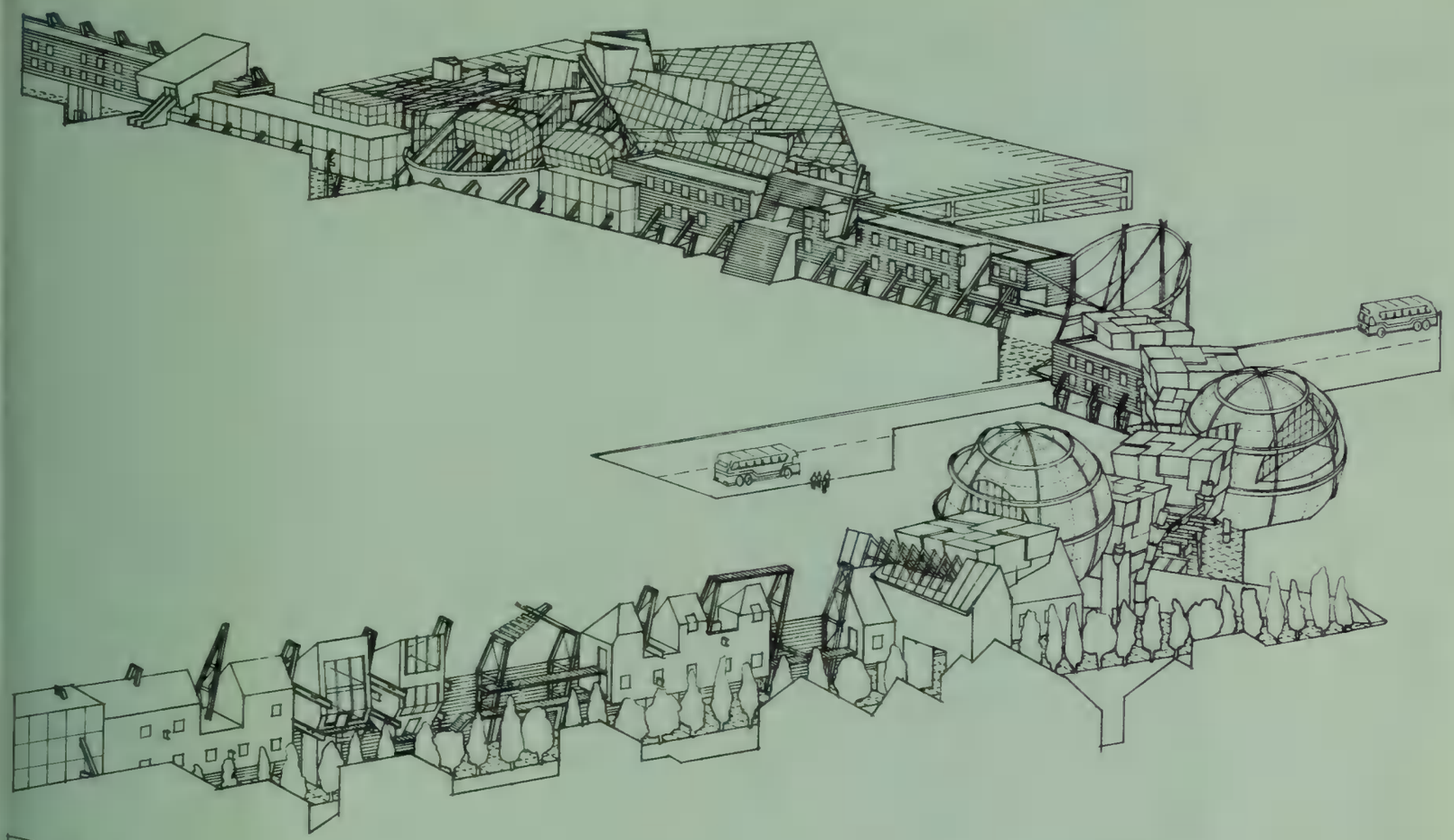
The Southern Pacific Air Rights City is a proposal for a half-mile arc of buildings to be constructed over unused railroad rights-of-way only partially owned by Smith. The railroad spur is part of a massive system that is currently being considered for mass transportation, housing, or gardens on other sites. Smith and Moss see this project as a way of extending the community by elaborating on the physical forms that already exist, rather than imposing new uses. Moss describes the proposed building as "a chameleon" that changes as it moves through different neighborhoods: starting as a "commercial gateway building" on busy National Boulevard, it becomes a multi-use housing development as it crosses a residential development, then a small shopping area and theater, next an office building, and then, when it crosses an area of artists' studios, an art gallery. The building completes its transformation on an adjacent, City-owned lot, where it will become a hotel, amphitheater, and community focal point.

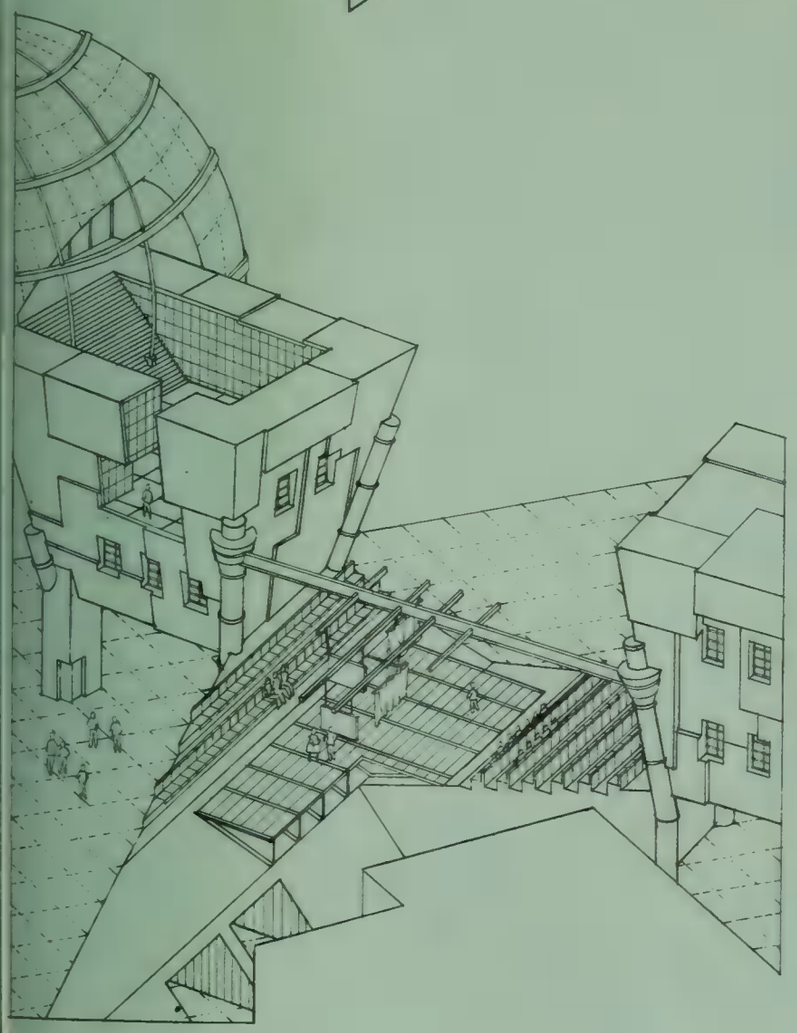
Thus the building seeks to bring together private and public: work, living and play, and disparate zones. This Chinese dragon of a building will apparently even have its own moods, since it will be "friendly" when it clamps onto either a Smith-owned building or one controlled by a cooperative owner, or "unfriendly" when it tries to work its way around non-cooperative territory. Lifting the buildings up in the air allows for horizontal circulation to continue underneath, while tying the otherwise inward-turned buildings on the site together with a landscaped "promenade." "This is about grabbing the land and doing something with it, but not in a CIAM [Congrès Internationaux d'Architecture Moderne] kind of way," explains Moss, referring to the preservation of the site's character, "this is about being ecumenical." Smith is currently in negotiation with owners of adjacent parcels, as well as with the City, to explore the viability of this visionary scheme.

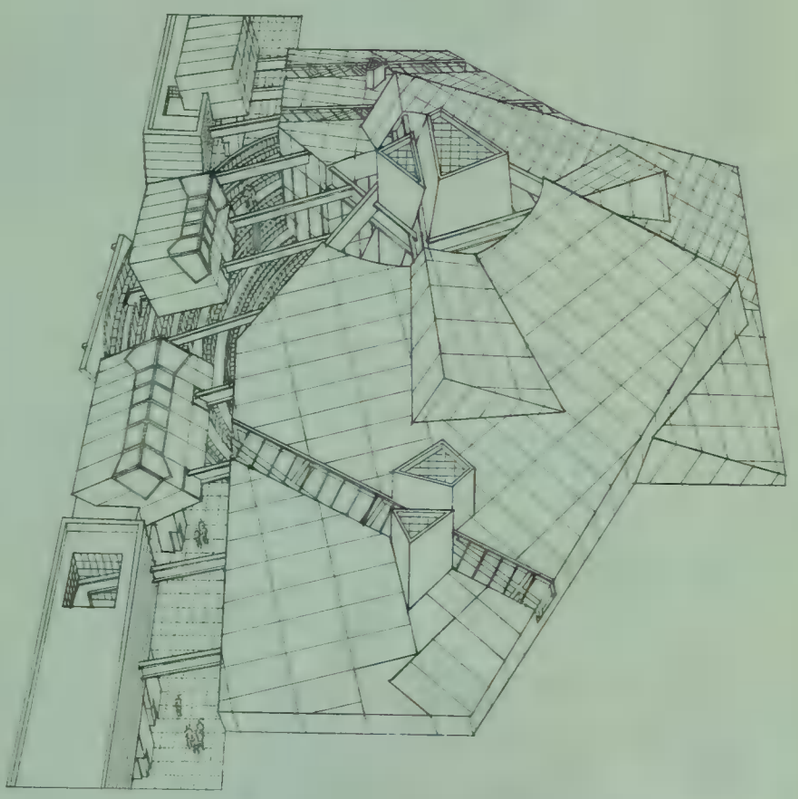


1. Samitaur
2. 8520 National
3. 8522 National
4. IRS Records
5. Hercules Theatre
6. 1R, 2R, 3R Theatre
7. Hayden Tower
8. Warner Avenue

Credits
Project: *S.P.A.R. City*
Owner: *Frederick Norton Smith*
Architect: *Eric Owen Moss—Scott Nakao, project architect; Lucas Rice, Todd Conversano, Amanda Hyde, Ravindran Subramanian, Marco Benjamin, Mark Harris, project team*

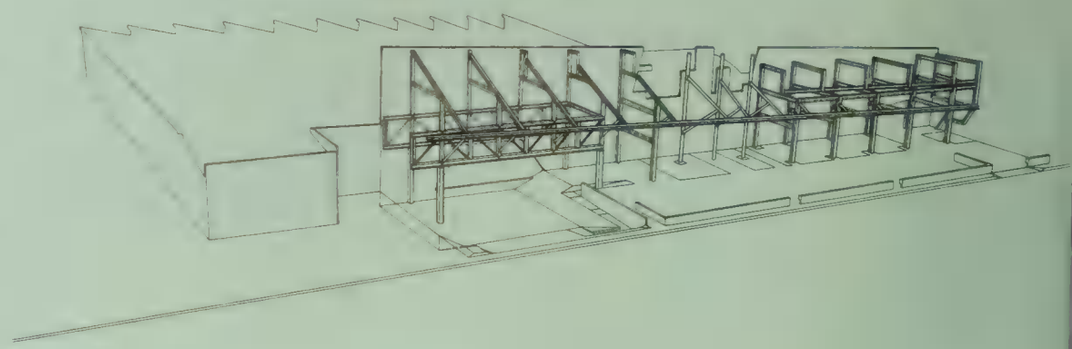




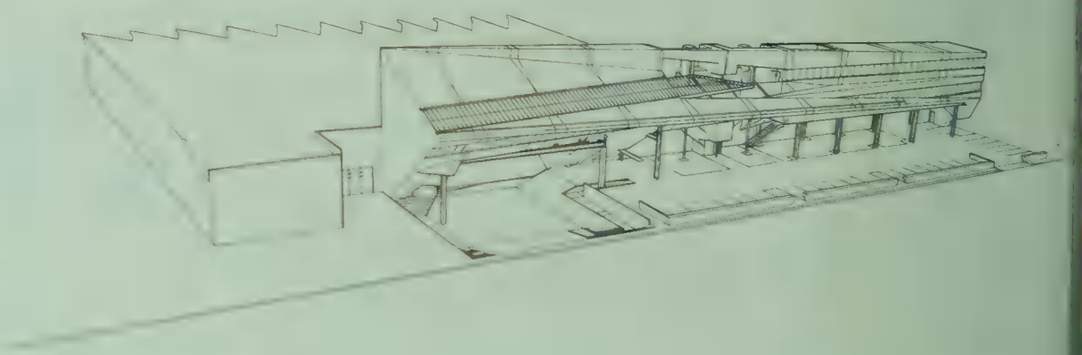


Hercules

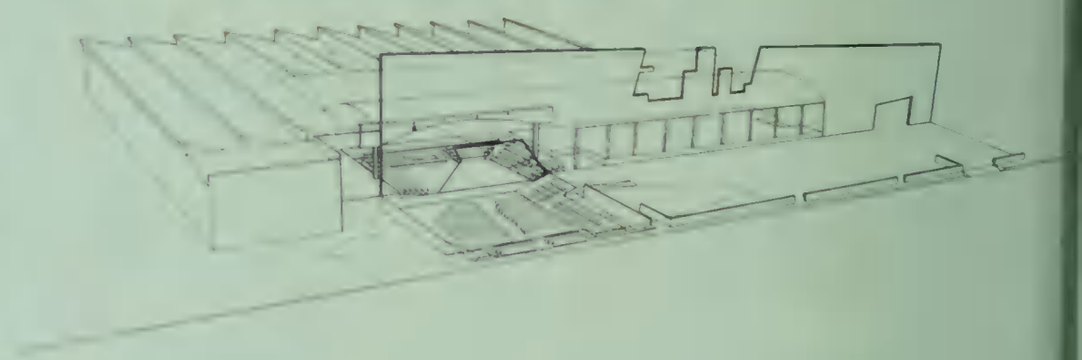
The Hercules building, currently under construction, is an expansion of the 8522 National Boulevard complex, and is built on the site of a former plastics factory, demolished so toxic waste could be removed from the site. The demolition on site, which included part of an adjacent, Smith-owned property, became the catalyst for a major new piece of construction. Culver City allowed the developer greater leeway in terms of height and square footage to facilitate the removal of this dirt. It did ask for parking, and Moss found room for 62 cars by lifting the building up off the ground.



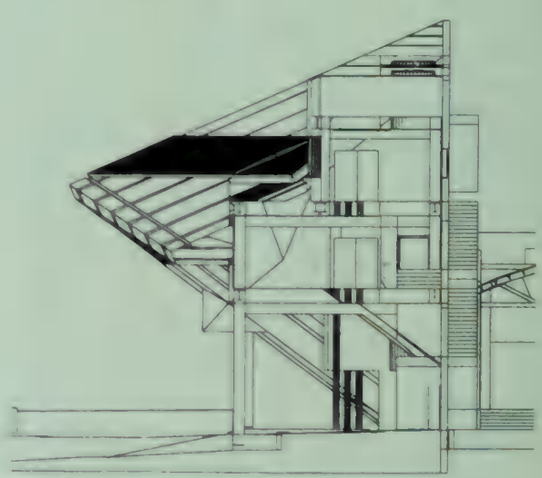
The structural gymnastics necessary to span the site combine with a purely theoretical pursuit of geometry to create the battleship-like form of the new development. The 20,000-square-foot, two-story office building is supported by a rigid steel structure, while vertical circulation and bathroom cores together become the spindle which the folded geometry of the building turns around. "The building moves from what can be known, at either end, to what cannot be predicted in the middle," says Moss. The angular geometries, which will be clad in steel-troweled black plaster, also serve to open up expansive views beyond the site.



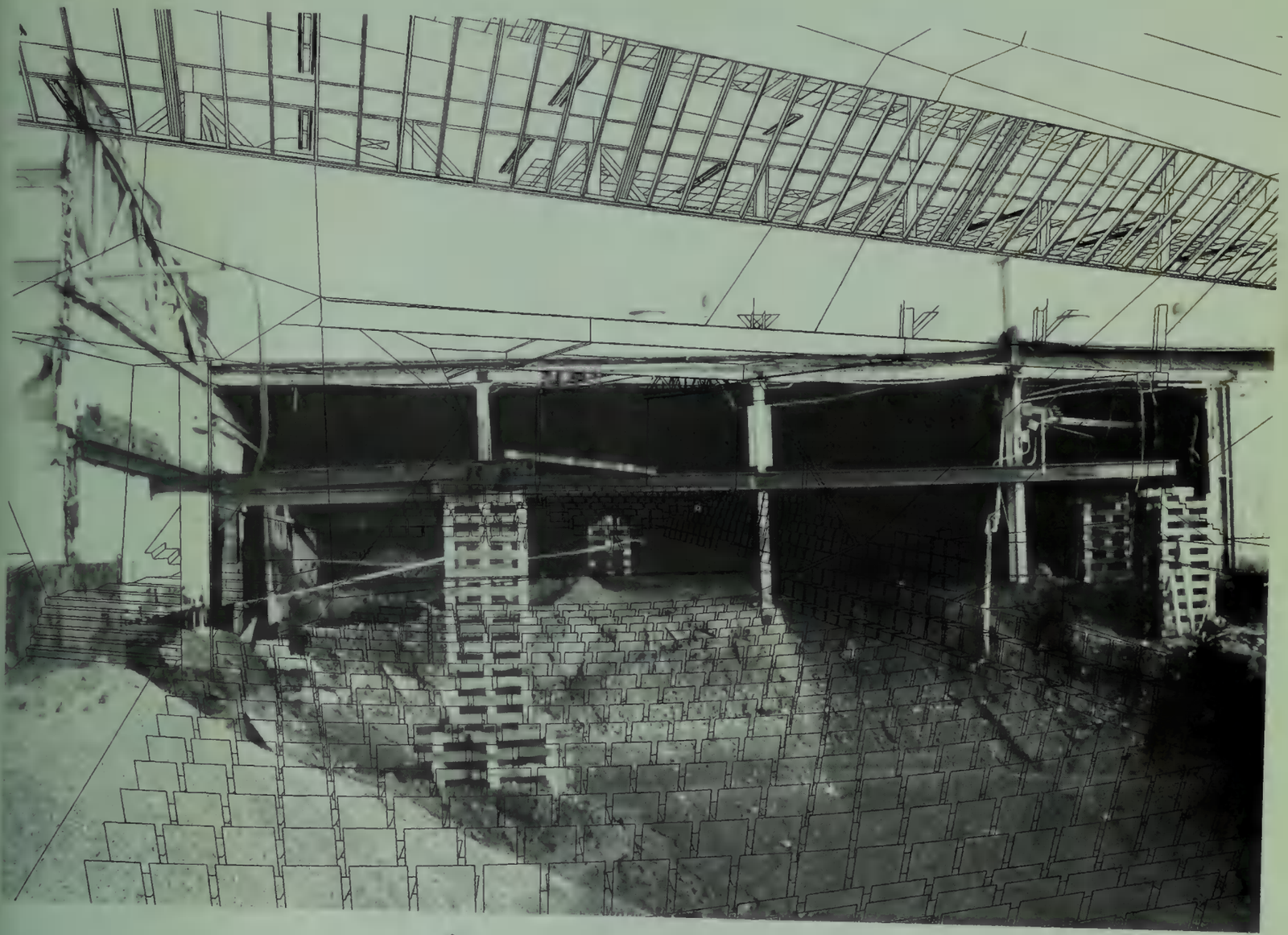
After they had proposed the new building, Moss and Smith did not just cover over the past: The hole left over after the toxic waste has been removed will become an outdoor amphitheater that faces a "black box" theater with 300 moveable seats housed in the recently renovated IRS Records building adjacent to the new development. The amphitheater, with 600 seats, doubles as a "garden court" in which workers can gather at lunch. The Smiths hope that this theater complex will become a catalyst attracting other such performing-arts institutions to the Hayden Tract, linking up with existing dance studios and set-design facilities, as well as with other theaters proposed for the Tract.

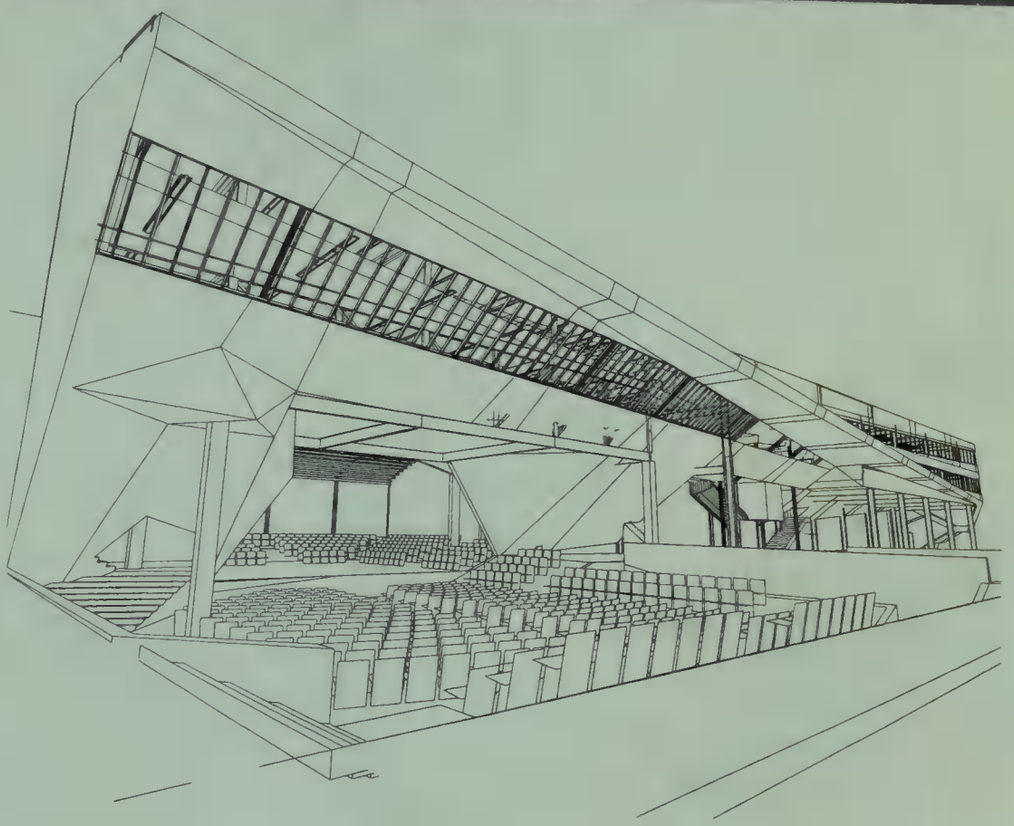






SECTION





Credits
Project: *Hercules Theatre and Offices*
Owner: *Frederick Norton Smith*
Architect: *Eric Owen Moss—Scott M. Nakao, Nick Seierup, project associates; Shengyuan Hwang, Dennis Ige, Eric Stultz, Thomas Ahn, Sophie Harvey, Scott Hunter, Naoto Sekiguchi, Todd Conversano, Paul Groh, project team*

Samitaur Complex

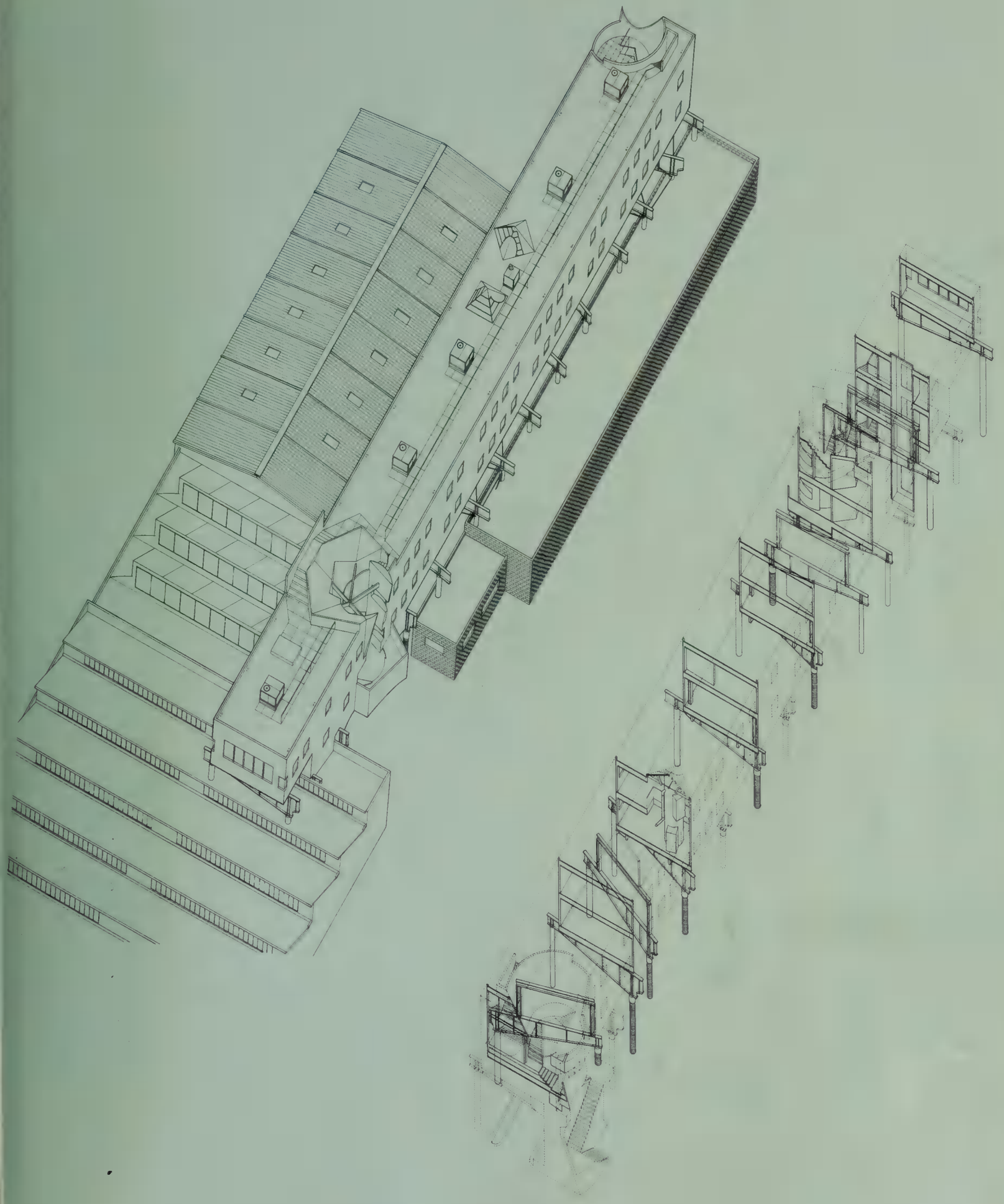
Samitaur is the name of the first development Moss designed for Smith. Deriving its evocative appellation from Smith's original family name, it is actually located outside of the Hayden Tract, on the other side of the river in Los Angeles proper. Originally designed for an existing tenant in an adjacent building who wanted to expand, this air-rights building is now being marketed as a stand-alone office building. Samitaur is supported by columns that are positioned to avoid truck loading docks in the existing structures. The resulting idiosyncrasies of the structure are both tamed and exploited by the relatively simple shape of the building above. A system of tapered steel columns braced by diagonal members provides the structural support for the two floors of office space Moss could squeeze between truck clearance below and a height limit above. The bar shape is cut through by an elaborate staircase and courtyard configuration that becomes the signature of the Samitaur, while providing views and gathering spaces in this otherwise harsh semi-industrial landscape.

The structural system is exposed and exploited to provide sprinkler heads for the grass courtyard, as well as sculptural elements framed by views from inside the office building. A planned third phase, "The Hook," lives up to its name by extending the Samitaur (all connotations of "samurai," as in a slashing architecture, seem fully intended) into a sickle-shaped hybrid shape that opens up to a private courtyard. Made up of a combination of polygonals and complex curves, this shed-like building elaborates some of the existing site geometry in its internal structure and then, like most of the Moss-designed buildings in the area, clothes them with an enigmatic shape that shelters and hides the new world inside. The main part of the project (Phase 1 and 2) is currently under construction.



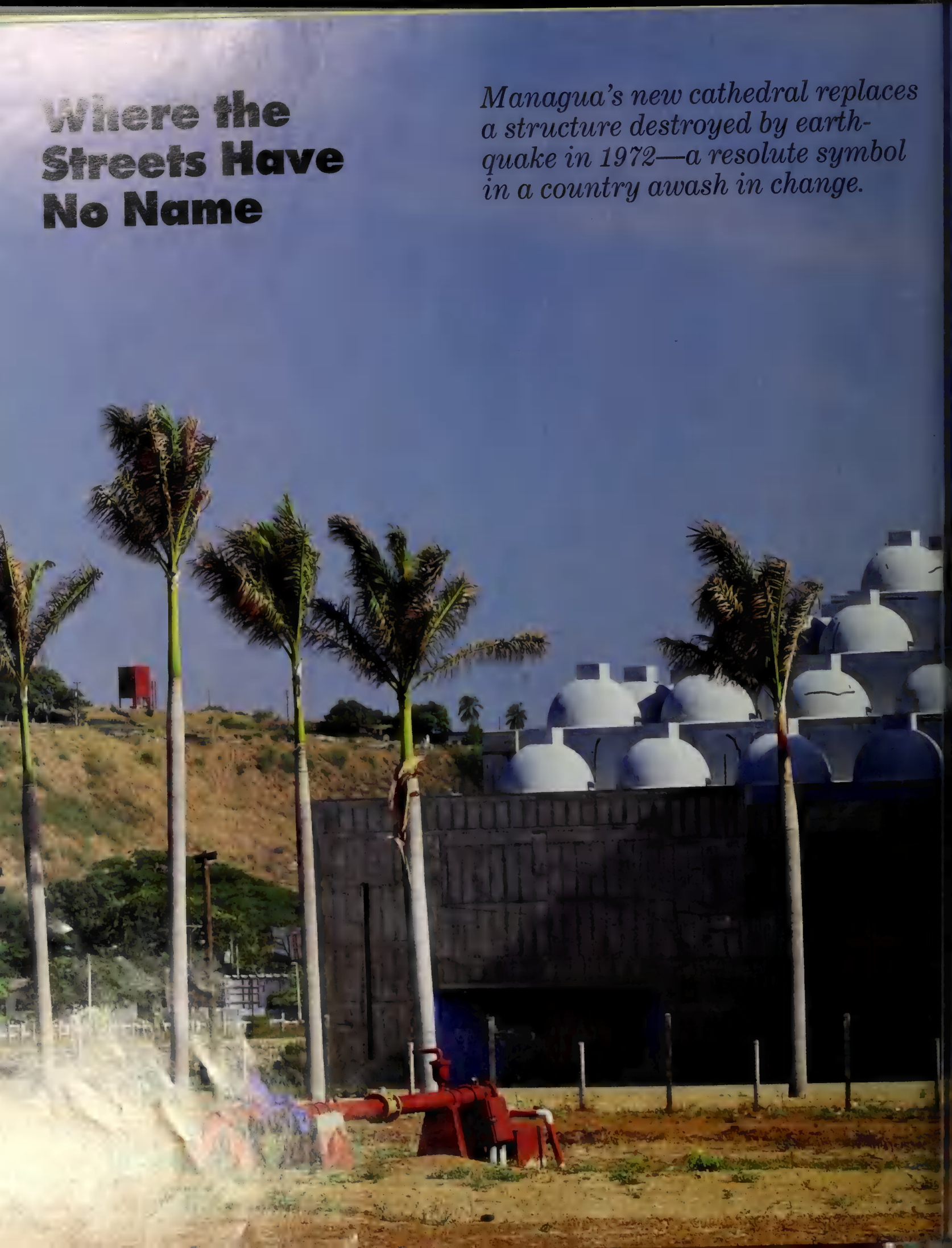


Credits
Project: *Samitaur Complex*
Owner: *Frderick Norton Smith*
Architect: *Eric Owen Moss—Greg Baker, Dennis Igo, Jay Vanos, project architects; Todd Conversano, Eric Stults, Eric Holmquist, Naoto Sekiguchi, Scott Nakao, Elisse Scrafano, Scott Hunter, project team*



Where the Streets Have No Name

Managua's new cathedral replaces a structure destroyed by earthquake in 1972—a resolute symbol in a country awash in change.

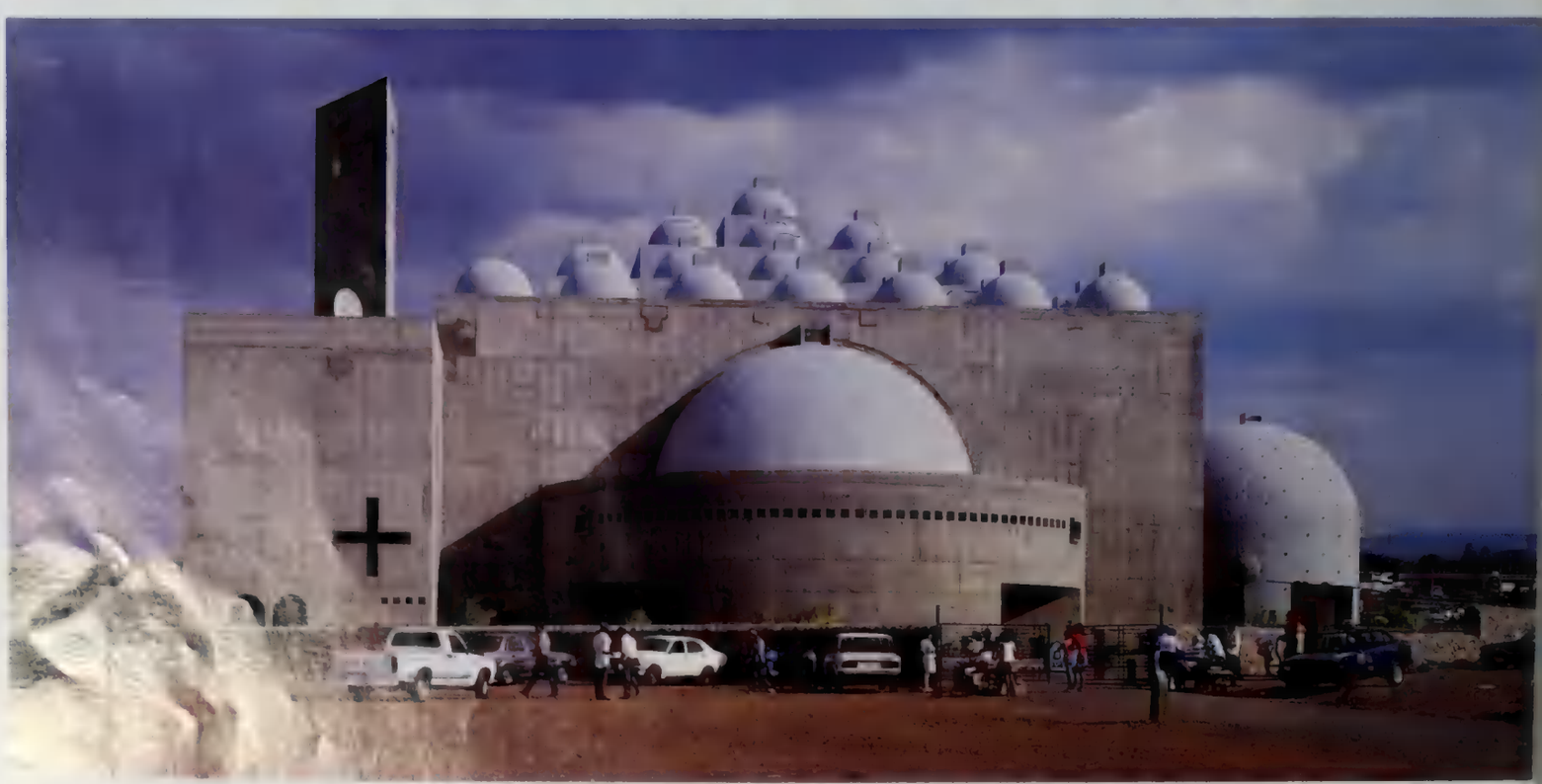




Managua Cathedral
Managua, Nicaragua
Legorreta Arquitectos, Architect

Oliver Abarca/Esto photos









Buildings are often like people—enigmatic, aloof, impressive, alluring, or frustratingly incomprehensible. The new cathedral of Managua, designed by Mexico City-based Ricardo Legorreta, is all this and more. It's also the biggest building to be constructed in Managua in decades, and in a country whose population is 88 percent Catholic, it is in constant use, typically drawing some 1,000 people for Sunday mass and up to 100,000 on holidays. In Managua, loyalty to its purpose is steadfast, but questions about its form invoke a variety of responses, some bordering on the heretical. Pointing to its rooftop landscape of bulbous skylights, some locals call it "pornographic." Its concrete silo—actually a veneration chapel—earned it the epithet "nuclear reactor." Bright pink- and purple-painted archways highlight its towering presence in a neighborhood of ramshackle structures, leading one Managua architect to label it a "jumbo comic."

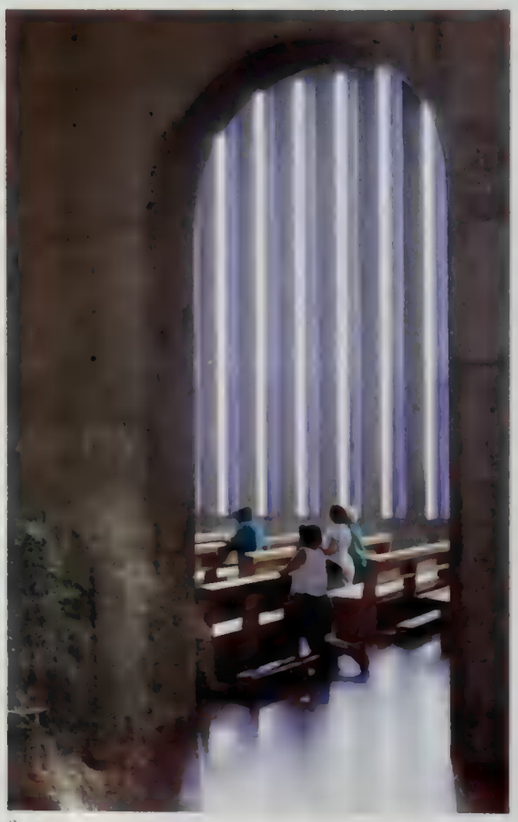
But the building is no joke. That it got built in three years while Nicaragua was still reeling from the aftershocks of revolution and a series of natural disasters is, as more than one insider put it, "miraculous." Managua has taken a particular beating. It was ravaged by earthquake in March 1931 and swept by fire five years later. Rebuilt as a commercial center, it was destroyed again by an earthquake in December 1972, when the city's Spanish Colonial-style cathedral collapsed. Political upheaval added to the damage: the 1978-79 revolution against the Somoza government by Sandinista forces ripped apart what was left of the city. Led by Daniel Ortega Saavedra, the Sandinistas expropriated sites with the intention of rebuilding the downtown. Plans were largely unrealized when the stand-off between the Sandinista government and American-backed contras finally led to a national election and the surprising February 25, 1990, victory of Violetta Barrios de Chamorro, widow of a newspaper publisher who had been murdered by General Somoza's forces in 1978. In a parting act of contrition, the Sandinistas gave the church a prominent 29-acre parcel for the new cathedral: a barren field at the crossroads of two major thoroughfares, in a place where the streets have no name.

One constant throughout much of the turmoil has been Miguel Cardinal Obando y Bravo, Archbishop of Managua since 1970—a savvy priest of peasant origins who had opposed the Sandinista government. The Cardinal turned to an unlikely ally in his quest to raise the spirits of Nicaraguan Catholics by finally rebuilding the cathedral: American Thomas Monaghan, founder of Domino's Pizza. Described by Legorreta as "a passionate Catholic," Monaghan had previously established the Mission Chapels Foundation to construct chapels in poor countries. Hearing of his work, the Cardinal invited Monaghan to Managua. Says Monaghan of his decision to join forces with the Cardinal: "One cathedral is equal to a lot of chapels, but symbolism is so important." Monaghan, an on-again-off-again Frank Lloyd Wright furniture collector and a patron of architecture, in turn asked Legorreta, saying of his choice "it was important to have a Spanish-speaking, world-class architect."

What Monaghan and Legorreta found on their first trip to Nicaragua in March 1990 might have sent a less resolute pair running the other way. Not only was the city a shambles, but the transfer of power between Ortega and Chamorro was a high-stakes drama: the airport was abruptly closed; phone service was suspended. In September 1990, five months after Chamorro was sworn into office, the Mission Chapels Foundation signed a letter of agreement with the Archdiocese of Managua outlining its gift toward a budget (including architectural fees) of $3 million—for every dollar allocated by the Archdiocese, the Mission Chapels Foundation would give (or privately raise) $5. Explains Foundation director Joe Davis: "The estimate was rough, since there had been no construction [of this scale] in Managua in over 15 years. The initial budget represented the price in Mexico." Ultimately, the project cost $4.5 million, with the overrun covered partly by Foundation money and donated local services.



1



2



3

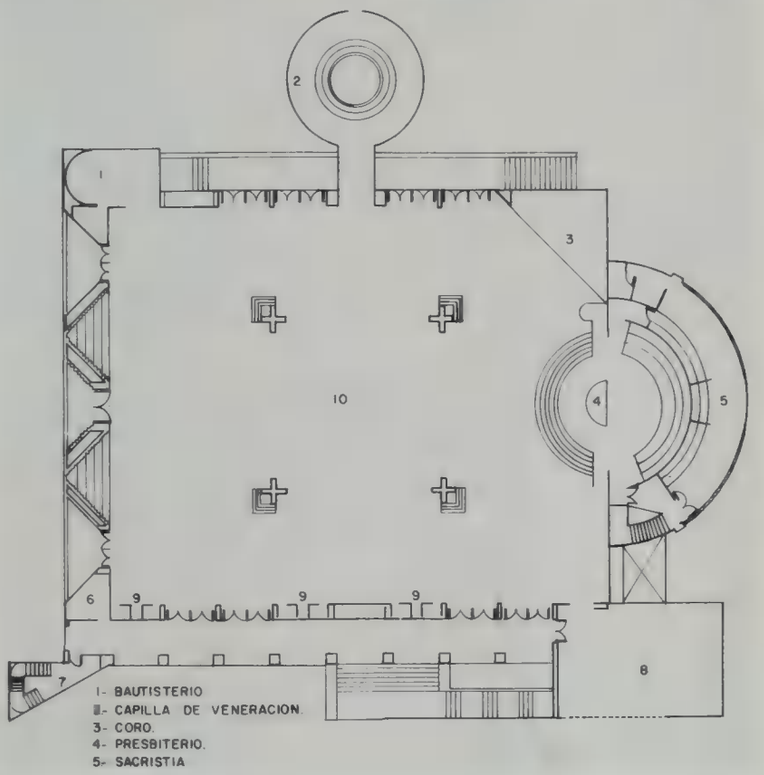
While Monaghan paid for Legorreta, and wrote a $40,000 check to finally shelve a long-discussed scheme by a local engineering firm—a design Davis remembers as "a barn with a tower"—he says the project "was strictly between Ricardo and the Cardinal." True to his humble origins, the Cardinal's mandate was "a structure of unadorned, simple beauty," according to Davis. The overall effect is, like the undertaking, multi-cultural. Legorreta calls the square plan and the onion-like domes that dot the roof "vaguely Islamic," like the Alhambra in Granada, perhaps a nod to the Spanish presence in Nicaragua. While the cast-in-place-concrete construction is straightforward, adequate pumps and cranes were difficult to obtain. Exterior concrete was chiseled for added texture, in part to reinforce the appearance of solidity in an active earthquake zone.

Legorreta oriented the central nave on a north-south axis and lined side aisles with pivoting oak doors to ease circulation in and out and exploit prevailing east-west breezes, a welcome reprieve from the tropical climate. As a result, the Cathedral is the coolest place in town; apart from a place of worship, it has become an unofficial community center, where people come for naps and quiet conversation. In a symbolic gesture, the architect placed the dome's high point over the congregation, not the altar. A separate veneration chapel resembles an orange bell jar. Inside, an ancient crucifix is mounted on a concrete podium. The Archdiocese built a transparent cage for protection, creating an icon-under-glass.

It is the at-times bizarre collision of forethought and serendipity, of formal rigor and make-shift construction, that make the Cathedral a potent modern-day symbol. While it strives to transcend its troubled setting, it is part of it. Metal scaffolding disfigured the wet concrete surfaces of the bell tower, which originally were going to be plastered and painted. Legorreta chose to leave the concrete as is. Now, the scarred tower is an appropriate and moving reminder of a country desperate to heal. *Karen D. Stein*

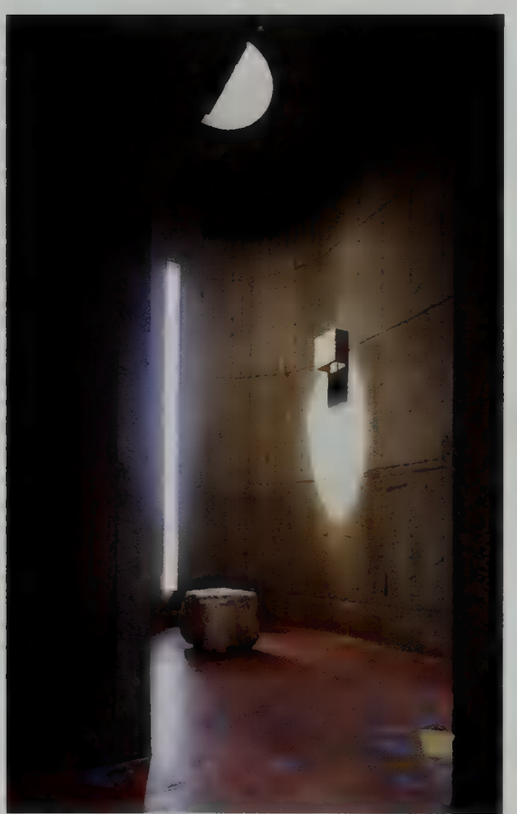
1. Baptistery
2. Veneration chapel
3. Chorus
4. Altar
5. Sacristy
6. Daily mass chapel
7. Bell tower
8. Confessional

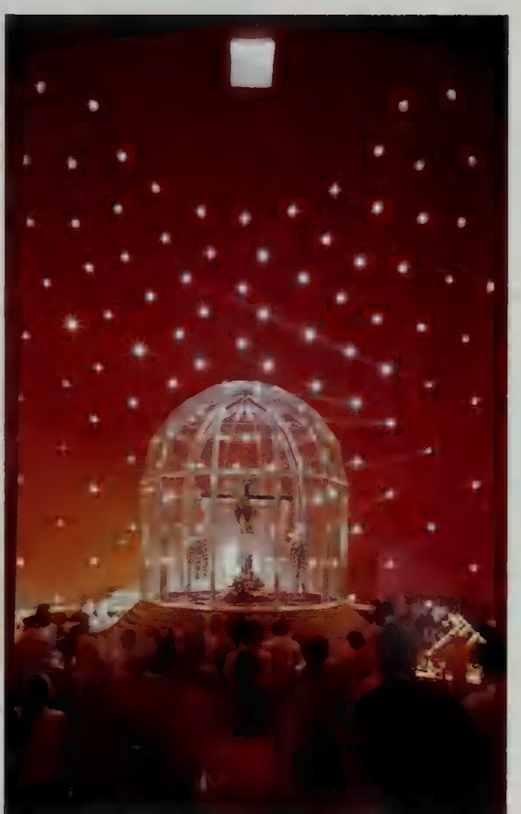
The 110-foot-high bell tower dominates the complex (1). The daily mass chapel (2, 4) is adjacent to the main gathering area. Concrete balls punctuate exterior archways (3). The baptismal room has a skylight (5), while small openings dot the dome of the veneration chapel (6).





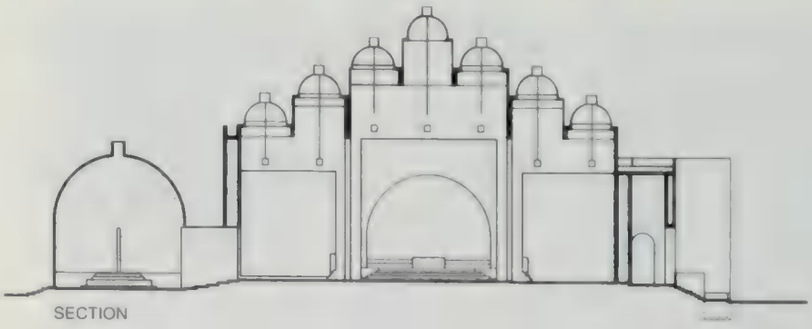
5





6





SECTION

The main gathering space is 140 feet by 120 feet, rising up to a height of 67 feet. The insides of the top-lit domes are painted canary yellow above and oppo-
sive bays of
cast-in-place concrete
Louis Kahn.
reference. Legor
indicative about
scale.

Up Close

When architecture and politics collide. The construction of a new cathedral in Managua some two decades after the destruction of the previous cathedral by earthquake was a cause célèbre, recent revolutions and natural disasters aside. The selection of a "foreign" architect, Mexican Ricardo Legorreta, was "demoralizing" to the Managuan design community, according to several local architects. (The country does have remnants of a building stock of locally designed International Modernism.) What's more, principal financing by Thomas Monaghan, whose Domino's Foundation supports conservative causes like the right-to-life movement, also raised eyebrows. While some complained that the $4.5 million should have been spent on food and shelter for Nicaragua's poor, the gift was specifically targeted to the nation's Roman Catholics, who comprise over 80 percent of a population of 4 million. Although the bright pink-, purple-, yellow-, and orange-painted surfaces are typical of Legorreta's work, they are newcomers to the current Managuan scene. (Softer hues can be seen on buildings in nearby towns that suffered less destruction.) The Cathedral is on a 29-acre site set off from the street by a barbed-wire enclosure and littered with garbage, creating an eerie mix of sacred and profane. An allée of mature palm trees, trucked in from Costa Rica, reinforces the processional route to the Cathedral, which is blocked on the south end by squatter's shacks. Legorreta's scheme called for 350 palms, but money ran out.

Credits

Managua Cathedral
Managua, Nicaragua
Owner: *Archdiocese of Managua*
Architect: *Legorreta Arquitectos—Ricardo Legorreta, principal-in-charge; Noe Castro, Victor Legorreta, Francisco Vivas, Miguel Almaraz, project team*
Project Management: *Natex Corp.—Jose Teran, project manager*
Engineers: *Walter P. Moore (structural); Lamsa (mechanical); Enrique Hernandez (electrical)*
General Contractor: *Consorgo Metropolitano*





Place of Healing

Minneapolis Pathways
Minneapolis, Minnesota
Annaheim Wanlan Architects,
Design Architect



inneapolis Pathways "is a health crisis resource center," according to its executive director, Howard Bell. "We work with people who are faced with serious life-threatening illnesses. We are not a treatment agency, not a clinic, nor do we offer alternative health care in terms of physical treatment. We help people empower themselves in a psychological, emotional and spiritual sense, to enable them to live their lives fully when they're dealing with a life-threatening illness." The center is operated for the most part by volunteers who for several years held their meetings and activities in a small Victorian house.

Architects Alex Anmahian and Nick Winton recall the group's hesitation about building a new building when they finally outgrew the space. "The users of the old Pathways house really enjoyed it because it was so non-institutional, and non-threatening," says Winton. "They're coming from the position of having come through all kinds of rigorous medical treatment, and institutional facilities, and I think for them a home-like environment was a huge breath of fresh air." "They actually said they didn't want the building to scream 'architecture' on the street," adds Anmahian. "They weren't interested in any polemic."

But the architects did believe the building should project its identity as a non-residential structure to the street to some extent. They used bleached, custom-milled wood siding to give the exterior the first-glance appearance of dignified cut stone, while the overall proportions of the building were kept in scale with the rest of the neighborhood. Inside, Pathways has a very residential feel, although the size and shape of the spaces is "very idiosyncratic," according to Winton. "Each room was designed for its own use. The result was kind of an unusual plan and section. While the kitchen, for example, is used as a kitchen, in a sense it's a therapy room where two people can sit at a table and have a cup of coffee and talk to each other. A lot of the replication of residential scale and look has to do with the fact that people feel a lot more comfortable in a setting like that."

The reception area is the pivotal point in the building's plan. Here, the front and rear entrances and two public spaces, the library, and lecture room converge with a small enclosed garden. "Once you pass through either of the entrances," says Winton, "our intention was that you would be focused on the center, which is the garden."

"The overall austerity of the building is very purposeful," says Anmahian. "We chose a very limited palette and used it in a way that we thought would make it as rich as possible. Part of the austerity has a lot to do with the users. They come from all walks of life, and we didn't want to respond with something so fussy and expensive that it wouldn't be of any use to them. After it opened, we got a lot of feedback from people who said the building wasn't what they expected, but they totally embraced it." *Charles Linn*



© *George Heinrich photos*









Members of Minneapolis Pathways, an organization that provides counseling and support for those who are threatened by serious illness, were reluctant to leave a homey, but too small Victorian house where they had been meeting for several years. Anmahian Winton Architects provided them with a purposefully austere building, respectful of the existing neighborhood scale. Exterior materials are simple bleached, custom-milled wood siding and sandblasted concrete. A small private garden (above) provides outdoor meeting space, and can be viewed from the library and lecture room.





Credits
Minneapolis Pathways
Minneapolis, Minnesota
Architect: *Anmahian Winton Architects (design architect)—Alex Anmahian and Nick Winton, partners-in-charge ; Shea Architects (architect of record)*
Engineers: *Gregorian Engineers (structural); Stroh Engineering (structural); R.L. Feig & Associates (mechanical)*
Consultant: *Mark Schreiever (landscape)*
Contractor: *K.M. Building Co.*



SECOND FLOOR

1. *Apartment*
2. *Therapy*
3. *Meditation*
4. *Foyer*
5. *Reception*
6. *Office*
7. *Conference*
8. *Kitchen*
9. *Meeting*
10. *Library*
11. *Lecture room*
12. *Garden*



FIRST FLOOR

Although the new Pathways building could not replicate the Victorian house that preceded it, architects Alex Anmahian and Nick Winton sought to establish a similar warm residential feeling through proportion, and their selection of finishes. Both the library (above) and lecture room (opposite) look out onto a small private garden that acts as a space for meditation or spontaneous meetings.



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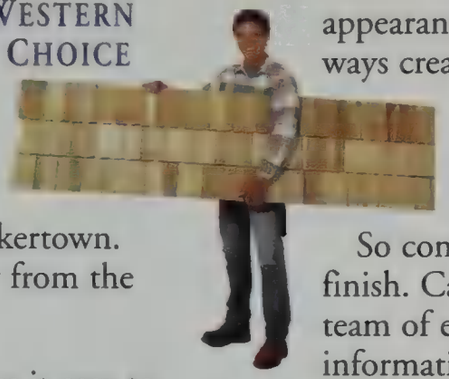
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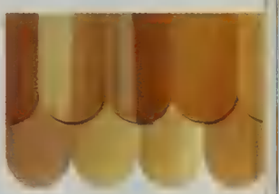
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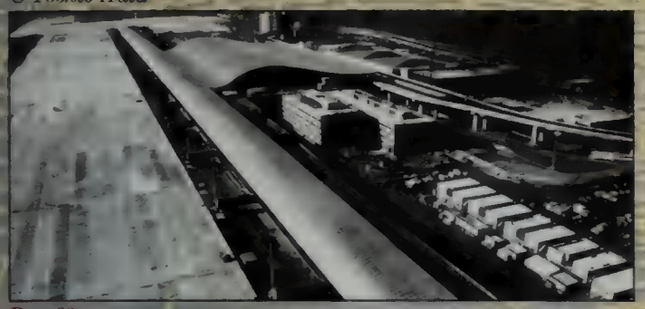
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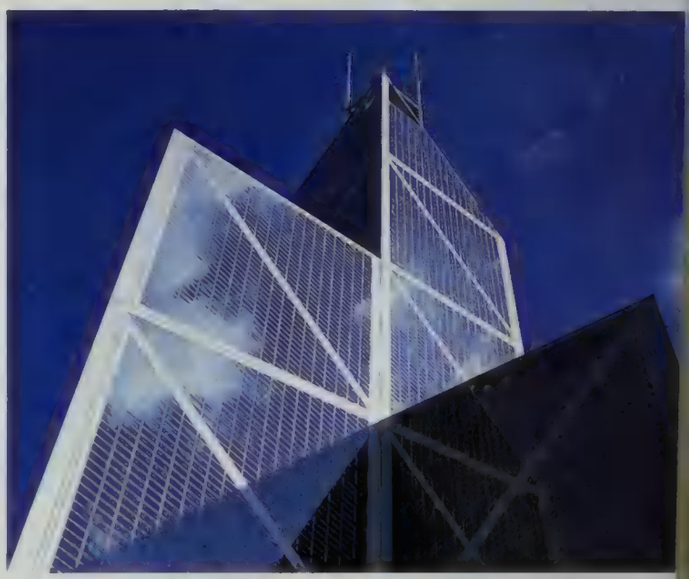
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Clifford A. Pearson, Editor-in-charge

For the second year in a row, ARCHITECTURAL RECORD has assembled a special section devoted to architectural design and practice in the Pacific Rim. Rather than focus only on what foreign architects are doing there, this section highlights work by design professionals from both East and West. Its goal is to show some of the most innovative work being done in this part of the world and examine some of the important issues and challenges facing architects there. Reflecting the rapid changes occuring within the Pacific Rim, this year's section includes expanded coverage of countries such as China and Vietnam. As Elizabeth Padjen states in her article "East Meets West," one key to success in Asia is perfecting the art of collaborating with colleagues from other countries. Taking that advice ourselves, the editors of ARCHITECTURAL RECORD worked with a number of architectural associations in the region in preparing this special section (see list, left). We thank them for their help and look forward to maintaining our overseas relations in the future. *C.A.P.*

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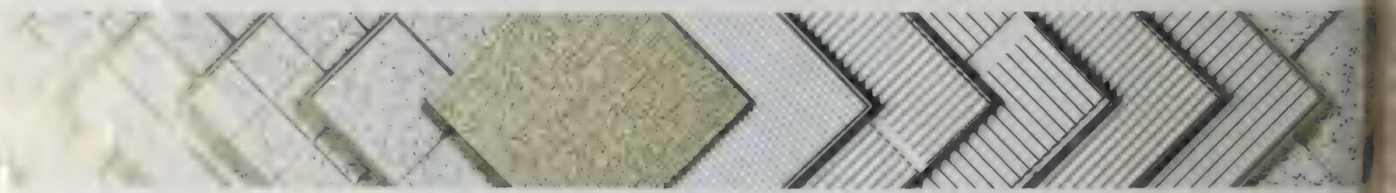
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China

China Market Beckons And Architects Hear the Call

Economic outlook: The Chinese economy has been growing at an annual rate of 13 percent for the past two years and has not slowed down through the first quarter of 1994. The gross national product for 1993 is estimated at $1.2 trillion and is projected to increase by 7 percent a year for the next decade. Due to fears that the economy may be growing too fast—bringing with it high inflation and reckless speculation—the Beijing government in the summer of 1993 introduced a series of measures aimed at limiting certain kinds of real-estate development. These measures included limiting credit, levying new taxes on the appreciation of property values, requiring commercial developers to provide low-cost housing, and declaring a moratorium on certain types of "luxury" developments. Demand remains high, however, for new office, retail, and residential space.

Housing: The Ministry of Construction has made housing a top priority and estimates that up to 14.6 billion square feet of residential space needs to be built in the rapidly growing urban areas over the next seven years. Because of this shortage of affordable housing, the government has tried to link commercial construction to residential building, asking developers to put up some housing in exchange for commercial loans.

Mixed-use projects: A shortage of retail and commercial space in China's larger cities has led to a wave of projects that combine retail, hotel, and office components. Being high-profile projects, these buildings are often designed by foreign architects.

Where the action is: Much of China's economic and construction boom has been concentrated in coastal areas such as Guangdong Province near Hong Kong. But building is heating up in interior provinces such as Sichuan. The greatest amount of activity is along the Yangtze River basin, with Shanghai (population: 13.5 million) acting as the head and development sweeping westward to the cities of Wuhan (pop: 6.8 million) and Chongqing (pop: 4.9 million). Shanghai is once again becoming the financial center of China (and maybe of Asia) and the return of Hong Kong to Chinese rule in 1997 may bring greater international investment to this key city. Most of the international projects being built in Shanghai are in the Pudong special economic zone across the river from the historic Bund. Beijing has taken a more cautious approach to development to preserve the special character of the historic city. But the Beijing-Tianjin region is attracting more international development these days and the port city of Tianjin (pop: 9.2 million) is trying to become the Shanghai of the northeast. In Liaoning Province near North Korea, the city of Dalian (pop: 5.2 million) has attracted a great deal of Japanese investment and is growing rapidly. In the southeast of China, Fujian Province has been described as a 300-mile-long construction site and overseas Chinese (especially those from Taiwan) have been busy in Xiamen City (pop: 1.1 million). Recently, the southern island of Hainan (pop: 6.9 million) has been a focus of resort development.

Architectural registration: There is no system for individual professional registration. In China, the term "architect" refers to the approximately 30,000 architectural practitioners working in 2,000 registered architecture institutes and offices. Instead of licensing individuals, the Ministry of Construction grants four classes of registration to design institutes and construction enterprises. Units with Class A licenses can undertake the design of buildings of any size or type anywhere in the country, whereas those with Class B, C, and D licenses are allowed to work on progressively smaller and less complex buildings in more restricted geographic areas. In keeping with China's drive toward increasing private enterprise, the Ministry of Construction plans to introduce a system of individual registration for Chinese architects by 1995. The Architectural Society of China (ASC) is now working with the U.S.'s National Council of Architectural Registration Boards to establish registration standards and a registration examination modeled after those in the U.S. The shift to individual registration may encourage small groups of architects to split off from big design institutes and place greater emphasis on design.



Shanghai International Center is a mixed-use project by Kaplan/McLaughlin/Diaz.

Role of the architect in China: Chinese architects tend to play a different role in the building process than their counterparts in the West. In fact, the term "architect" is perhaps more accurately translated as "builder" or "master builder," reflecting the Chinese profession's emphasis on construction rather than design. In China, the architectural profession retains many aspects of a building trade. Most architectural practice takes place in state-owned design institutes and construction conglomerates in which senior architects, in the role of masters, teach, train, and direct apprentices in the work. For most of the last 45 years, credit for architectural design was given, not to an individual designer, but to the designer's work unit. Only recently has the practice of identifying the design architect been

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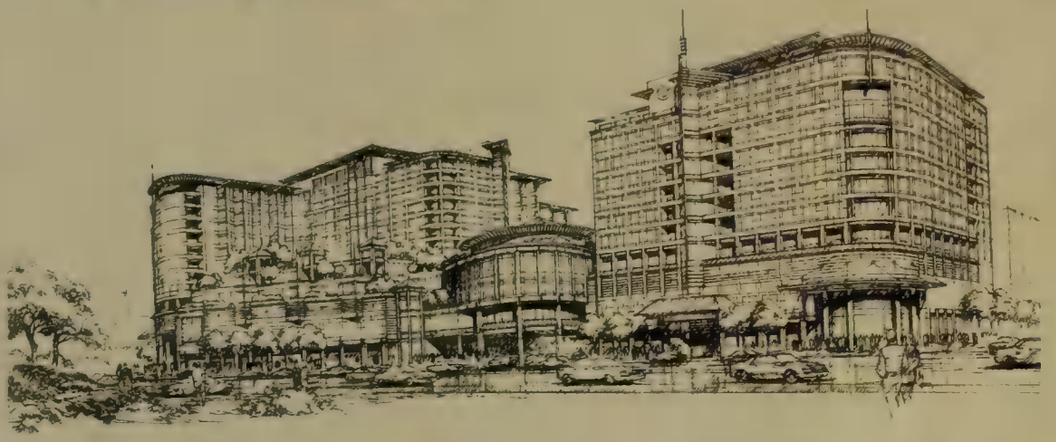
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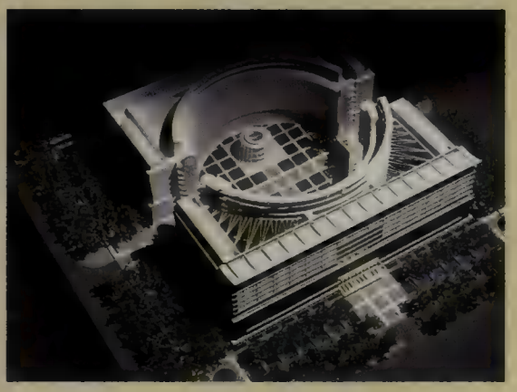
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Xi Xi, a project by RTKL and the China Aeronautical Project and Design Institute (below); the China Bank of Commerce and Industry in Beijing by SOM/S.F. (bottom).





Continued from page 3

revived. Due to the recent construction boom, the prestige of the architectural profession is growing among China's youth, and architecture has become one of the most popular career tracks in college. In the last decade, the number of college-level architecture programs has grown from eight to 54.

Design institutes: Traditionally, the state-owned architectural design institutes served as government design offices. As the state reduced its role in the economy and encouraged private development in the 1980s, government subsidies to the design institutes were radically reduced. As a result, the institutes were forced to reinvent themselves as quasi-private architectural firms and compete in the marketplace. Because government regulations require foreign architects to work in collaboration with a Chinese architectural office, the design institutes have become key players in all international building projects in China. Although there are more than 250 Class A design institutes throughout the country, the State Ministry of Construction Institute and six regional institutes are the most important. A few dozen big-city institutes rank just below them. The large regional institutes often have staffs of about 1,000 and operate branch offices in key cities around the country. (See profile of one such institute, page 7). Some key city institutes have staffs of about 500 and compete with the regional conglomerates for big jobs.

Opportunities for foreign firms: The 30,000 architects in China serve a nation of 1.2 billion, resulting in a ratio of 25 architects for every 1 million people. By comparison, the ratio in the U.S. is 340 architects per million residents. According to the ASC, there simply aren't enough Chinese architects for the volume of construction that the nation now requires. In general, the Chinese architectural community has welcomed foreign colleagues, due to the opportunities they present for infusing new ideas and modern technology into the local architectural profession. "China has been closed for a long time," says Zhang Xinan, vice president of the ASC, "so architects are eager to know about foreign designs, new ideas, new projects. There's an intense interest to know what's happening outside." The costs of working in China can be very high, with travel and time away from the office being two major expenses. In an ARCHITECTURAL RECORD survey of North American firms working in China, one firm said it sends three to four staff people every two weeks to Asia, while a majority of responding firms log at least 12 Asia trips a year.

Means of entry: While some foreign firms have landed commissions by competing in design competitions, open competitions are not well publicized outside of China and invited ones often reimburse firms for only a fraction of their costs. Another method of getting work is to identify clients and projects and then contact the Ministry of Construction or the local municipality for introductions to a design institute with which to collaborate.

Contracts and negotiation: Because China's market economy does not yet have a solid legal foundation, it is recommended that architects take extra caution when signing contracts. In China's soaring economic climate many real-estate deals are shaky and some are altogether fraudulent. Requesting payment for services is considered acceptable and is therefore highly recommended. A common complaint among foreign architects is that bargaining and negotiating can be relentless, even after contracts have been signed.

Dispute resolution: Order in Chinese society is traditionally based on relationships rather than legal codes, so it is generally preferable to resolve conflicts through third-party intermediaries rather than before a court of law. Therefore, it is strongly recommended that contractual agreements for work in China include an arbitration clause.

Agents: While some firms operate successfully without local representatives, many foreign firms have appropriated the Chinese practice of retaining a third-party agent to establish and maintain relationships with clients, design institutes, and government officials. These intermediaries can be used to deliver a hard line, steer a project through local authorities, or break a stalemate in negotiations. William Karst, a principal of The Callison Partnership, however, believes agents are not always a help. "We've represented ourselves without agents, consultants, and go-betweens because we believe it's the direct contact with the client that creates the energy and excitement," says Karst.

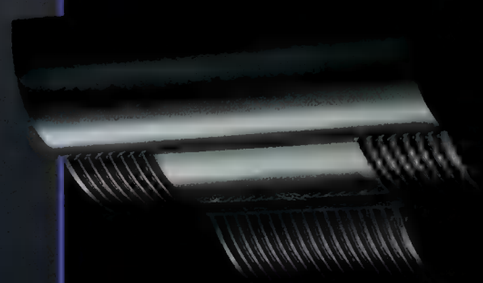
Key contacts: Architectural Society of China, Zhang Baiping, director of foreign affairs, Bai Wan Zhuang, West District, Beijing 100835. Tel: 86/1/839-3428. Fax: 86/1/831-1585

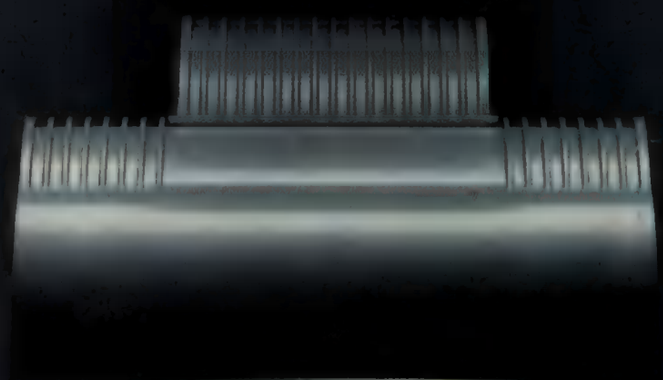
- Chinese Ministry of Construction, Design and Administrative Division, 9 Saulihe Road, West District, Beijing 100835. Tel: 86/1/839-3724. Fax: 86/1/839-3333.
- U.S. Embassy, Foreign and Commercial Service, Craig Allen, commercial attaché, 3 Xiu Shui Bei Jie, Beijing 100600. Tel: 86/1/532-3831, x 482. Fax: 86/1/532-3297.

Grant W.K. Sung, American architect working in Beijing.

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Profile: Inside the East China Architectural Design Institute

Overview: Established in 1952, the East China Architectural Design Institute (ECADI) is one of the oldest and largest architectural practices in China. Like all design organizations in this Communist country, ECADI was once totally beholden to the government, but is now transforming itself into a more entrepreneurial operation doing work for private developers and foreign investors, as well as government agencies. One sign of ECADI's metamorphosis is its four-color brochures, written in Chinese and English, that promote its design, engineering, and CAD capabilities.

Size and scope: One of just a handful of regional design institutes in China, ECADI employs 900 people, including 148 senior architects and engineers, 260 staff architects and engineers, 315 assistant designers, 85 administrative personnel, and 57 technical-services staffers. While the Institute is based in Shanghai, it has branch offices in three other locations: Xiamen in Fujian Province, Shenzen north of Hong Kong, and Hainan Island in the south of the country.

Organization: A multi-discipline firm, ECADI is organized into three basic-design studios, a housing-design studio, an interior-design studio, and various departments covering services such as project management, building technology, and computers. While ECADI has become an aggressive marketer of its services and a skilled collaborator with foreign firms, its organizational chart provides reminders of its Communist roots: a hierarchical structure and units like the Propaganda and Education Department. "We like to think of that as their marketing group," says Laura Johanson, communications specialist for The Callison Partnership, a Seattle firm that is working with ECADI on several projects in China.

A good year: According to Xue Yuelai, a department chief and senior engineer with ECADI, the institute bills between $20 and $30 million in fees annually and designs about 10 million square feet of space each year. Thanks to the booming Chinese economy, ECADI had a record year in 1993, building 28 million square feet of space.

Range of work: ECADI has designed buildings in 27 provinces in China and 16 foreign countries (mostly in Africa and eastern Europe where Communist ties were strong). Completed projects range from the mixed-use Shanghai Centre (designed in collaboration with John Portman & Associates) to the Shanghai Railway Terminal Building, the Sheshan Observatory, and the Huating Sheraton Hotel.





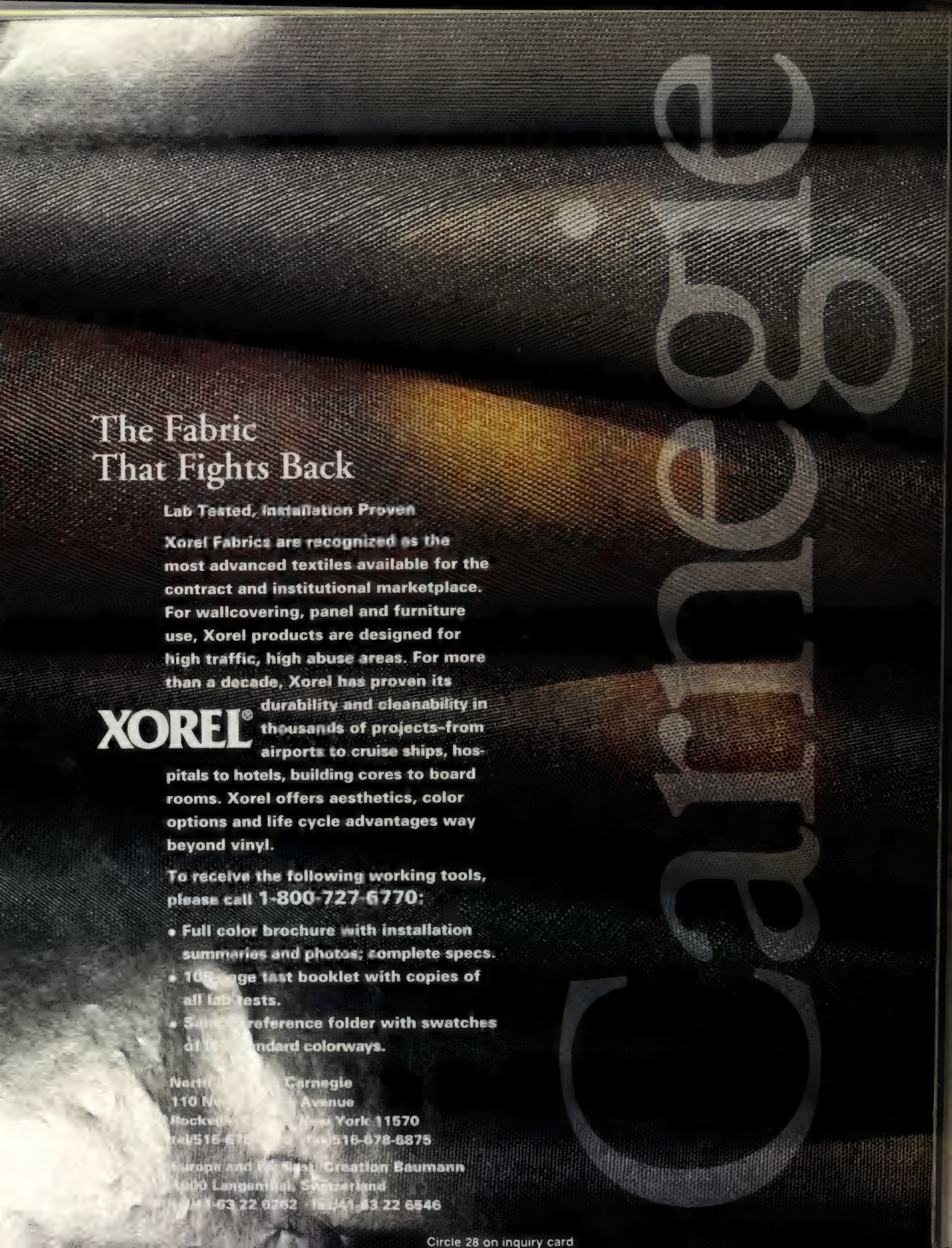
Two by ECADI: Bank of China Headquarters, Shanghai, with Callison (top); Shanghai Centre, with Portman (above).

©Michael Portman

Collaborations: ECADI is currently working with six different foreign architecture firms on projects in China and in the past has collaborated with firms from Japan, the U.S., Hong Kong, and Taiwan. "There are many opportunities for foreign architects in China," says Xue. "Usually a foreign firm gets a job through a design competition or contacts with developers, and then looks for a Chinese design institute to work with," explains Xue. "Most of these projects have foreign clients or are joint ventures between Chinese and foreign clients." *C.A.P.*

Key Chinese Design Institutes

- *Beijing Architectural Design Research Institute. Nanlishi Lu #62, Beijing 100045 Tel: 86/1/801-2255.*
- *Beijing Institute of Architecture and Engineering. Xizhimenwai Zhanlaguan Lu #1, Beijing 100044. Tel: 86/1/899-781.*
- *Chinese Northeast Architectural Design Institute. Guangrong Jie #65, Heping District, Shenyang 110006, Liaoning Province. Tel: 86/24/360-290.*
- *East China Architectural Design Institute. Han Kou Lu #151, Shanghai 200002. Tel: 86/21/321-7420.*
- *Fujian Province Architectural Design Institute. Tongning Lu #54, Fuzhou 350001.*
- *Guangdong Province Architectural Design Research Institute. Liuhua Lu #97, Guangzhou 510010, Guangdong Province.*
- *Guangzhou Design Institute. Guangwei Lu #10, Guangzhou 510030, Guangdong Province. Tel: 86/20/331-484.*
- *Jiangsu Province Yangzhou Architectural Design Institute. Xinbeimenwai Youyi Lu #2, Yangzhou 225002, Jiangsu Province. Tel: 86/514/343-027.*
- *Ministry of Construction Architectural Design Institute. Chegongzhuang Dajie #19, Beijing 100044. Tel: 86/1/831-2266.*
- *Nanjing Architectural Design Institute. Zhongshannan Lu #189, Nanjing 210005, Jiangsu Province. Tel: 86/25/402-019.*
- *Shanghai City Institute of Architectural Design. Chifeng Lu #71, Shanghai 200092. Tel: 86/21/546-1580.*
- *Shenzhen Architectural Design Institute. Shennan Lu, Shenzhen 518003, Guangdong Province. Tel: 86/755/530-631.*
- *Southeastern University Architectural Institute. Sipai Building #2, Nanjing 210018, Jiangsu Province. Tel: 86/25/713-341.*
- *Tianjin Architecture Design Institute. Qixiangtai Lu, Hexi District, Tianjin 300074. Tel: 86/22/334-161.*
- *Tianjin University Architectural Department. Tianjin University, Weijin Lu, Nankai District, Tianjin 300072. Tel: 86/22/319-044.*
- *Tongi University Architectural Institute. Siping Lu #1239, Shanghai 200092. Tel: 86/21/545-5080, x-3332.*
- *Xiamen Architectural Design Institute. Fuhua Li #1, Xiamen 361003. Tel: 86/592/23458*


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Hong Kong

China Work To Keep Architects Busy for Years

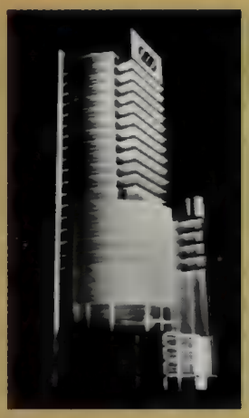
Economic outlook: With GDP having reached $110 billion in 1993, the Hong Kong economy is expected to grow 5.5 percent in 1994, says government economist K.Y. Tang. According to Tang, GDP growth will average 5 percent annually during the four years leading up to the colony's shift to Chinese sovereignty in 1997. Per capita GDP is continuing to grow, hitting $20,600 in 1994 from $18,500 a year ago. Coupled with a softening in residential property values that saw prices fall 5 to 10 percent this spring, growth in per capita GDP should ensure a surge of buying and new construction.

Residential construction: Last year 65,550 units of housing were built in Hong Kong, with the government housing authority accounting for slightly more than half of the total. It is projected that 41,150 units will be completed in 1994 and 49,500 in 1995.

Commercial construction: A total of 2.3 million square feet of commercial space was completed in 1993. The government projects that 2.6 million square feet of office space will be built this year and then 2.2 million square feet in 1995.

The China factor: The wild card in Hong Kong's future is the Chinese economy, which many economists now say is heading for a hard landing that could see the country's growth rate of 13 percent over the last two years fall to 6 percent or even 4 percent. But even a major cutback in construction on the mainland would not likely hurt Hong Kong architects. "There's more work in China than all of us can handle," says Dennis Lau, managing director of Ng Chun Man & Associates and president of the Hong Kong Institute of Architects. Hong Kong firms say that 30 to 50 percent of their business is now in China.

State of the profession: Fees are set monopolistically at three to four percent of some of the globe's most expensive projects, making Hong Kong architects among the highest paid in the world. But there is a lot of grousing and angst in the profession. "There isn't the institutional work you get in the U.S. or Europe," since most government-funded projects are handled in-house by government architects, says Prof. Tunney Lee, chair of the department of architecture at the Chinese University of Hong Kong. Private-sector projects are commercially driven, so "Hong Kong architectural firms don't get to be very creative," says Lee. Dennis Lau says Hong Kong architecture is getting better. Since very high land prices make construction costs a small percent of a project's total budget, spending a little more on architecture is not a big problem for developers, says Lau.



The Ambassador Hotel in the Tsim Sha Tsui district (left), by Rocco Design, exemplifies some of the strengths of the latest generation of Hong Kong buildings: tall, efficiently planned, and more concerned with quality than earlier construction.

Hong Kong style: Lau argues that a Hong Kong "style" has evolved in the last decade, the product of the territory's uniquely high land prices. That style is first and foremost tall, and secondly dense, to make maximum use of the available footprint. *David Lindorff, correspondent for* Business Week.

Taiwan

Looking to the Mainland For Future Growth

Economic outlook: Although GDP growth has remained about the same for the last three years (6.6 percent in 1992, 6.1 percent in 1993, and an estimated 6.4 percent for 1994), a reduced level of spending by the government combined with the fallout from overbuilding in previous years have cast some clouds over the economic scene. Vacancy rates in the office sector in Taipei run over around 20 percent, while those in other major cities such as Kaoshiung and Taichung are even higher. The speculative real-estate boom of several years ago seems to be over for the time being.

Housing: Pending legislation to reduce the FAR for many housing developments in many urban areas is generating a rush to start apartment buildings. But soaring labor and construction costs threaten to make these units too expensive for many families.

Hotel construction: While a recent surge in high-end hotel building may have tapped out the market, there is growing interest in resort development. Resort hotels, though, are seen as risky ventures since Taiwan's tourism industry is still relatively young.

Looking abroad: With many companies moving low-technology manufacturing to low-wage countries in other parts of Asia, Taiwanese developers are looking abroad for future opportunities and are bringing their architects with them. The biggest market is mainland China, where nearly 40 percent of all foreign investment is now Taiwanese. According to architect C.P. Wang, a principal of C.Y. Lee & Partners, about 50 percent of his firm's work will be in mainland China in the future. "China is like Taiwan in the old days," says Wang. "So Taiwanese architects know what to expect in terms of power and politics. Unfortunately, esthetics and concern for the environment are low priorities there."

The growing Chinese market has also created opportunities in Taiwan, as some international corporations begin to view Taiwan as a convenient base of operations for ventures on the mainland.

Identity crisis: "The architectural profession is in its infancy here," explains Wang. Just 20 years ago, all architects were trained in engineering schools and clients saw no difference between the two professions. Only as developers began learning from the Japanese and then the Americans in recent years, have they started to appreciate the value of architectural services. Even now architectural fees are very low compared to those in the U.S., and clients expect many upfront services to be provided for free. *Miguel Baltierra, an American architect working in Taiwan.*

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Rapid Growth Predicted as Doors Open to Foreign Investment

SOM/San Francisco did the masterplan for Saigon South (below and bottom left). Hong Kong-based Tao Ho designed the New World Hotel in Ho Chi Minh City (bottom right).







Economic outlook: Since Vietnam changed its laws on foreign investment in 1987, more than $7.5 billion in capital from abroad has been invested in the country. In the first quarter of 1994 alone, foreign businesses received licenses for $1 billion in new ventures. This figure is expected to grow exponentially with the lifting of the 19-year-long U.S. trade embargo in February. In 1993 Vietnam's economy grew by 8 percent and inflation subsided dramatically to 5.2 percent (from 800 percent in 1986). Per capita income, though, is $240 a year, making Vietnam one of the world's poorest countries.

Demographics: Despite the government's policy of urging families to limit themselves to two children, the country's population of 72.6 million is growing at 2.3 percent annually and is expected to reach 85 million by the year 2000. Over 70 percent of the population still earns a living from agriculture. But recent migration of peasants to the two principal cities—Hanoi (population 2.8 million) and Ho Chi Minh City (formerly Saigon, population 4 million)—has increased pressure on an already decayed urban infrastructure.

Development: The resumption last November of $1.86 billion in loans from international lending institutions, is providing a major boost to the construction sector. These loans will help Vietnam make critical repairs to its crumbling infrastructure, including improving Highway 1 linking Hanoi with Ho Chi Minh City, rebuilding bridges throughout the country, upgrading the Saigon port, building schools, and modernizing agriculture. These repairs, in turn, should draw additional billions of dollars from private investors who have been reluctant to act due to poor communications and distribution networks. Until recently, inadequate laws governing land use, relatively high land prices, and massive amounts of corruption and red tape have deterred all but a handful of foreign property developers. But now a construction boom is underway and the frenzy is hampering efforts to develop long-term plans.

Housing: As people move from the countryside to the cities, pressure on the existing urban housing stock is becoming severe. Last year the government finally began formulating a strategy at the national level that will encourage private ownership of housing. In 1992 private investment in house building was $283 million; figures for 1993 are expected to be nearly twice that number.

Major construction: As of spring 1994, there were 55 construction joint-ventures with a total of $480 million in foreign capital bidding on lucrative infrastructure projects. Although the Vietnamese constitution forbids private ownership of land, foreign investors have received leases of nearly 50 years. Major American contracting firms that have established themselves in Vietnam include Parsons Brinkerhoff, Brown & Root, Bechtel, and Fluor Daniel. Skidmore, Owings & Merrill is preparing a master plan for Saigon South, a new town for 700,000 people.

Hotel development: Blessed with beautiful beaches and scenery, Vietnam is prime for hotel and resort development. In addition to activity in Hanoi and Ho Chi Minh City, major efforts are underway around Ho Tay Lake north of Hanoi and in central Vietnam, along Da Nang's white-sand coastline.

Role of local architects: Vietnamese architects have played a very small role in most of the recent commercial ventures. The Vietnam Union of Architects (VUA) is lobbying for a law that would require foreign architects to associate with Vietnamese firms. The secretary general of the VUA is Nguyen Truc Luyen and the VUA's address is 23 Din Tien Hoang, Hanoi. Tel: 84/4/253-648.

Special procedures: Foreign architecture firms working in Vietnam must obtain a license at the State Committee for Cooperation and Investment in Hanoi, 56 Quoc Tu Giam Street. Tel: 84/4/232-642.

Major players: Government agencies guiding architecture include the Ministry of Construction and the various Chief Architects offices in major towns. The National Institute for Urban and Rural Planning under the Ministry of Construction sets policy initiatives and drafts master plans for the largest towns. Contact: Nguyen Ngoc Khoi, director of National Institute for Urban and Rural Planning, 37 Lo dai Hanh Street, Hanoi. Tel: 84/4/258-691.

Tim Karr, Hanoi-based journalist, and Irene Lee, Chinese University of Hong Kong.

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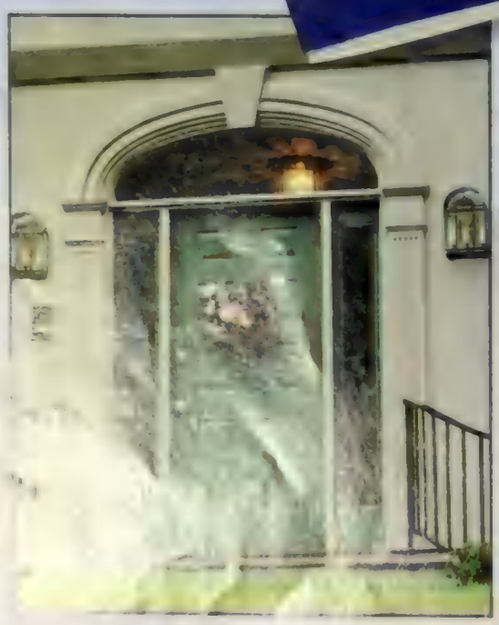
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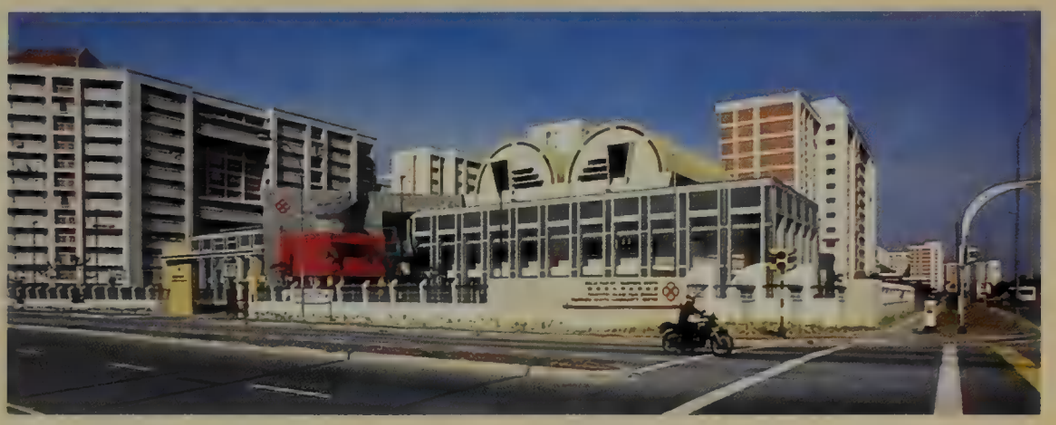
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Singapore

Rate of Growth Slackens After Building Boom

As areas outside Singapore's central core grow, facilities like the Tampines Community Center (below), designed by William Lim Associates, are needed.



Economic outlook: After two years of double-digit growth in 1991 (21 percent) and 1992 (17.6 percent), construction in Singapore increased by 9.5 percent last year. With the economy as a whole growing by 6 to 8 percent, construction activity this year is expected to expand by just 5 to 8 percent. Last year, $6.8 billion in contracts were awarded, with $4 billion of this sum coming from the public sector.

Public sector: Major public-sector projects included the Housing and Development Board's $1.3-billion program to build and upgrade housing, and a $210-million program to build educational and health facilites. A total of $6.23 billion in construction is expected in 1994, with the public sector accounting for almost 70 percent of this.

Office construction: In the private sector, the huge supply of office space being completed in the next few years will further dampen an already glutted market. Although the occupancy rate for private office space rose 0.7 percent in 1993 to 88.5 percent, it is expected to decline slightly in 1994.

Residential construction: According to Colliers Jardine Singapore, the private residential market should remain strong this year, but slow down in 1995. It estimates that 12,325 housing units will be started this year.

Relations with foreign architects: As foreign firms have won many coveted commissions in the last few years, some local architects have expressed concern. One problem, say local architects, is the tendency of foreign firms to create designs that ignore local conditions. Go Chong Chia, the head of the Singapore Institute of Architects, says, "It is important that when developers invite foreign architects here, they should make it clear that they should understand our aspirations, our culture, and our national agenda. From the buildings done so far, it is clear that their commitment is not with us."

Green architecture: Another issue on the minds of local architects is the environment. "At the moment, the buildings here have little consideration for the environment," states Go. Energy conservation, noise control, pollution, and more efficient patterns of urban development are issues that architects should address more consistently, says Go.

Joanna How, freelance writer in Singapore.

Thailand

Construction Rebounds as Architects Seek More Ecological Designs

At the Dusit Rayavadee resort in Krabi Province, Four Aces designed buildings that echo traditional Thai architecture and fit sensitively with the jungle (below).



Economic outlook: The Thai economy continues to boom, with real GDP growing at an estimated rate of 7.5 percent in 1993 to $123.1 billion. Growth closer to 8 percent is forecasted for 1994 and 1995. While construction slumped in 1992, growing only 3.5 percent (compared to 11.9 percent in 1991), it is growing again—up 7.9 percent last year.

Where the action is: About 80 percent of all construction is still concentrated in the Bangkok area. For most building types, supply currently outstrips demand, with the hotel market perhaps being the hardest hit. A surprising number of new Bangkok hotel projects, though, are getting started—including the Peninsula Hotel, a project located on the Chao Phraya River, in which Brennan Beer Gorman Architects of New York is involved. According to one consultant, the market for hotel space should come out of its current trough by the time the Peninsula opens in three to four years.

Other growth areas: Bangkok's domination is not total. Two provincial "growth corridors," spurred by tourism, industrialization, and transportation links, are emerging: the eastern seaboard development zone, (where Rayong, located south of the resort city of Pattaya, is becoming an important hub for heavy industry), and the Bangkok-to-Nongkhai corridor in the northeast.

Foreign competition: Under the recent GATT trade agreement, Thailand will have to open its market to foreign architects. The issue has divided the local architectural community, according to Yodyiam Teptaranon, president of the Association of Siamese Architects (ASA). Many Thai architects are strictly against letting foreigners register.

Environmental concerns: With traffic jams, poor city planning, and insensitive architecture all hallmarks of modern Bangkok, environmental issues are much debated. "We architects have destroyed a lot of nature already," says Yodyiam. "It's time to go back to nature. Natural, but high-tech, that's the new idea here." *Tomas Larsson, Thailand correspondent for* Business Asia.

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Healthy Economy Spurs Construction and Advances Among Architects

Economic outlook: Malaysia still has one of the world's blessed economies. The rate of growth is twice the rate of inflation, the foreign debt is miniscule, and there are enough foreign exchange reserves to cover eight months' imports. Based on current performance, the government's prediction that growth will average 7.5 percent over the next 10 years is not unrealistic. In 1993, the economy grew by more than 8 percent, the sixth year in a row it had done so, and analysts expect it to expand by 8.2 percent this year. Though inflation is more of a problem this year than last, it should stay below 4 percent and then rise to 4.5 percent in 1995.

Construction activity: The construction industry posted its fifth straight year of double-digit growth last year. In 1994, growth is expected to ease to 11 percent, from 11.5 percent in 1993.

Residential building: Lower interest rates, now around 7 percent, and easy profits from the stock exchange, which grew by 97 percent last year, have kept demand for residential units up. A recent survey by Bank Negara, the central bank, showed that housing starts in Malaysia's 13 biggest towns and cities increased 15 percent in 1993.

Commercial building: The same Bank Negara survey revealed a massive 80 percent increase (as measured by floor area) in starts on commercial projects. But in Kuala Lumpur (K.L.), the capital city, the shortage of commercial space is not so acute. According to Abdul Rahim, executive chairman of K.L.-based property valuer Rahim & Co., "a shortage situation existed in 1993 and will continue to exist until 1996. The market then goes into an oversupply situation from 1996 to 1998 before reverting to a shortage situation again." Average rentals for office space in K.L. dropped 6 percent in 1993—proof that supply is outstripping demand. But Rahim sees a geographic shift, with more building needed to the south of the capital city. The new international airport at Sepang, 25 miles south of the capital, has opened a new southern corridor for growth.

Industrial building: Industrial space is in great demand, with the most activity happening in Malaysia's three industrial centers: K.L., Johor Baru, and Penang. Johor, just across the border from Singapore, presents the best opportunities today, as its rate of growth is around 15 percent, higher than either K.L. or Penang.

Workload: There are 2.9 architects for every 10,000 people living in urban areas in Malaysia, compared with 5.3 in the U.S. As a result, Malaysian firms are very busy and are hiring architects from abroad. Since American architecture qualifications are not recognized, while British degrees are, almost all of the foreign hires are from Britain. The profession, though, is becoming increasingly internationalized and American firms are working in Malaysia in association with local firms. The heavy workload has encouraged many Malaysian firms to computerize. "Malaysia is more advanced in CAD than most of the rest of the world," says Ken Yeang, a principal of K.L.-based architects T.R. Hamzah & Yeang. "Over 20 percent of firms are fully computerized."

Foreign competition: Although some architects resent the influx of foreign firms, "all the good architects here welcome competition from abroad," says Hilmi Yusoff of Hilmi Faridah Architects. "Competition improves quality and brings in new ideas. It is not being resisted now."

GATT: With the implementation of the new GATT trade agreement, the market for architectural services will open up. "That means you have to offer something that others don't have," says Yeang. "Price is the easiest. We can do construction drawings for one-third the price of the Japanese."

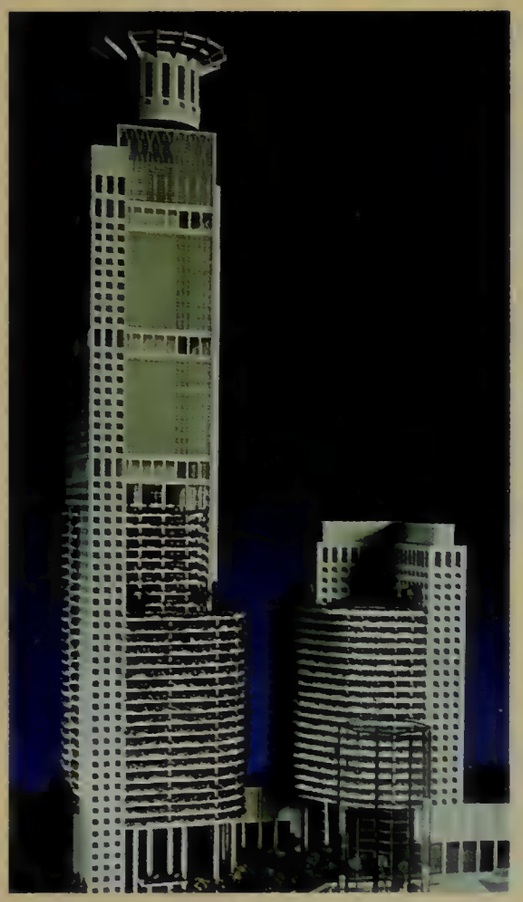
Slicing up services: According to many architects, clients are "unbundling" services so that one firm may do upfront design work while another does the construction documents and construction supervision. Says Mani Kahar, a partner in the architectural firm DNA Consultants, "The profession is being sliced up. I believe architects should do the whole thing, from conception to completion. Otherwise, it's like a cut-and-paste job, a collage." The industry, however, is becoming increasingly specialized, with some firms concentrating on overall design and others on interiors or construction drawings.

Working abroad: The internationalization of the profession works both ways and Malaysian architects are now winning jobs in China, Vietnam, Australia, and elsewhere in the Pacific Rim—mostly for Malaysian clients. According to Yeang, his firm now earns 10 percent of its revenue abroad.

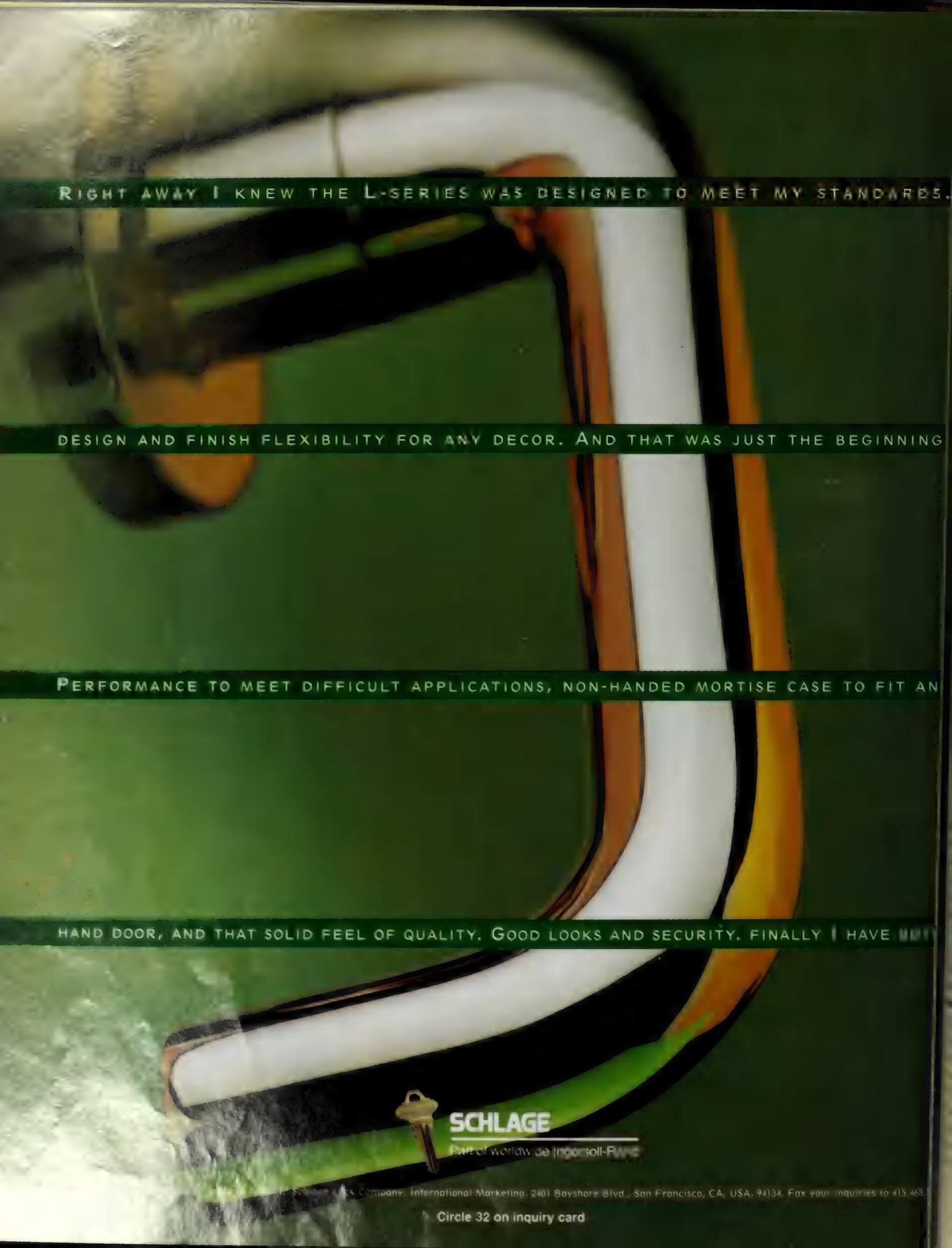
Sid Astbury, Malaysia-based journalist.



New headquarters for Telekom Malaysia was designed by Hijjas Kasturi Associates.

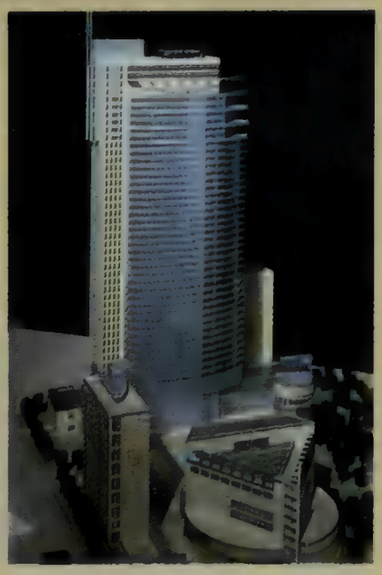


The new Sogo Complex in Kuala Lumpur was designed by the Malaysian architecture firm Arkitek M.A.A.


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Architects Search for Identity In the Face of Rapid Change





Mixed-use in Jakarta: Citraland Centre by Development Design Group (below) and Graha Purnagudha by SOM/NY (right).

Economic outlook: Indonesia has the largest and most diversified economy in Southeast Asia with a GDP of $116 billion in 1993. After three years of 6.5 percent annual growth, the Indonesian economy is slowing down and is predicted to expand by 5 percent a year for the next five years. Reasons for the economy cooling off are recession in major export markets (such as Japan and Europe), competition from new investment locations in southern China and Vietnam, local banking scandals, and tight-money policies.

Office construction: In the late 1980s, deregulation of the banking industry generated an office-building boom led by the emerging private sector. In addition, liberalization of trade and investment policies made Indonesia attractive to foreign investors. From 1989 to 1993 the supply of office space increased almost 16 percent each year. An oversupply of office space, though, developed by 1993 and construction slowed considerably. The recent completion of Jakarta's ring roads has begun to draw office construction away from the city's center to outlying areas.

Residential construction: Generated by an urban population that is growing 2.5 percent per year and augmented by a drop in interest rates, demand for housing continues to grow. Foreigners are not allowed to own real estate now, but this should change soon, opening a new market for luxury apartments.

Adapting design to the local culture: In an interview in the newspaper *Suara Pembaruan*, Eko Budiardjo, a professor of architecture, expressed concern that Indonesian architects were losing their identity in the face of foreign design. "It is a shame that the majority of Indonesian architects follow the rule: 'If you can't beat them, join them,'" he said. Roy Higgs, head of Development Design Group, a U.S. firm working in Indonesia, counters that, "As long as an Indonesian architect designs a building that fits its time and place, he will retain his identity."

Social issues: In a country with a large gap between rich and poor, bridging the distance between groups is an key issue for architects. Social concerns are particularly important in large planning projects, like satellite towns, where the mix of housing types is a key factor. *Wayne Forrest, director of the American-Indonesian Chamber of Commerce.*

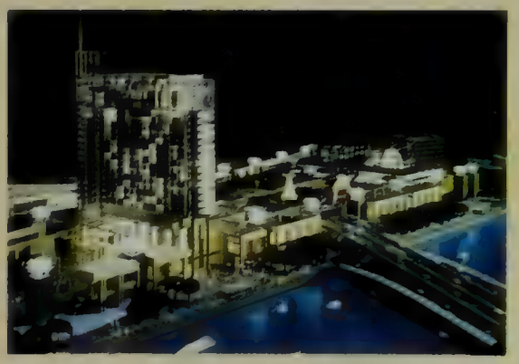
Down Under Turns the Corner

Economic outlook: After reaching the depths of a long recession in 1992—when unemployment topped 11 percent and GDP declined by 0.5 percent—Australia's economy grew by a respectable 3.5 percent in 1993. Having suffered from the same recession, New Zealand also saw its economy pick up last year, expanding by 3.6 percent. Projected growth for 1994 is 4.5 percent for Australia and 2.4 percent for New Zealand.

Making lemonade from lemons: New Zealand has attacked its empty-office problem by converting commercial buildings into residential ones. In Auckland, falling commercial rents, the influx of Asian immigrants, and tax concessions have made commercial-to-residential conversions successful. As a result, the city's downtown has been revitalized with more people, cafés, and security. Following Auckland's lead, Melbourne and Sydney in Australia are converting many offices into apartment buildings.

Recovery gamble: The strongest building types include housing in Queensland, resort hotels anywhere on the coast, and atrium malls. The largest developments on the boards in both countries are entertainment-and-casino projects. The $188-million Sky Tower casino complex in Auckland, designed by Craig Craig Moller in a "Jetsons" space-age style with a 1,075-foot tower, will open by the end of 1995. Three casinos are planned for Australia, with projects in Melbourne and Sydney near central business districts.

Future of the profession: According to the Royal Australian Institute of Architects, the number of small practices increased by 30 percent during the recession as architects left struggling large firms to seek their own work. One result of this trend has been intense bidding on projects that has led to a downward spiral in architects' incomes. *Graham Jahn, Sydney architect and writer, and Andrea Fraser, of Jahn Associates.*



The Melbourne casino was designed by Bates Smart McCutcheon with Peddle Lyon Mathieson and Daryl Jackson.

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South Korea

Global Pressures Touch Architects



The 210,000-sq-ft Dacom Corporation Research and Development Center in DaeJon was designed by Junglim Architects & Engineers.

Economic outlook: The South Korean economy grew 5 to 6 percent in 1993, raising GNP to $314 billion. A factor in this growth was strong exports to Southeast Asian countries. Another was the government's continuing support of land development, public housing, and infrastructure projects.

GATT: With the signing of the Uruguay Round of the General Agreement on Tariffs and Trade, trade barriers to foreign architects will be mostly eliminated. Not surprisingly, Korean architects are concerned about this change.

Types of practices: The architectural profession in Korea can generally be categorized in four groups: large A/E firms affiliated with business conglomerates; well established independent architectural firms; medium-size independent architectural firms; and small and already endangered independent firms. In today's more globalized world, the greatest pressure will be on the large independent firms which currently struggle to compete against the large affiliated firms and will now find themselves competing also against firms practicing in the international marketplace.

Possible scenarios: Jinho Moon of Junglim Architects & Engineers, a large independent firm, believes that private-sector clients will be attracted to the experience of foreign firms which will tend to promote turn-key projects. Moon suggests that by aligning themselves with Korean construction firms already experienced in overseas turn-key projects, Korean architects might strengthen their position in the marketplace. He also suggests that Korean architects look for ways to start exporting their services.

Blending old with new: During the past decade, Korean architects have become increasingly conscious of the need to establish an appropriate and uniquely Korean approach to blending the traditional with the modern. Many architects believe that this issue is being explored most successfully by some of the country's smaller firms. The small firms' demise or exclusion from significant design work by foreign competition could impede the growth and development of Korean architecture, say some observers. *Holly DeYoung and Jung Gon Kim, of Tai Soo Kim Associates.*

Philippines

Nation Gets Back on Track After Transition from Dictatorship

Economic outlook: After a difficult period of adjustment following the fall of the Marcos regime, the Philippine economy grew modestly last year and is projected to pick up steam over the next two years. In 1993 the country's GDP improved by 1.7 percent, while remittances by overseas contract workers pushed GNP up by 2.3 percent. The service sector, which accounts for 40 percent of GNP, was up 2 percent, while agriculture expanded by 1.5 percent. Inflation, down to single-digit levels, averaged 7.6 percent. Most analysts predict GNP growth of around 5 percent in 1994 and up to 6.5 percent in 1995. At the same time, interest rates are half what they were in 1991 and the exchange rate has stabilized.

Future challenges: While progress is being made with the economy and President Fidel Ramos has established political stability, challenges remain, including a huge budget deficit, low levels of domestic savings, and a high foreign-debt-to-GNP ratio. Economic recovery should help President Ramos address structural flaws, such as the economic and political dominance of the powerful oligarchy, which limit growth.

Hotel building: Coinciding with the economic recovery is a dramatic expansion of the hotel industry. "I think the hotel industry is a good indicator of a country's growth," says Masaru Ishibashi, executive vice president of the Manila Diamond Hotel. The biggest agent for change has been the completion of several Shangri-La hotels: in the Makati business district, in fast-growing Mandaluyong, and on the island of Cebu.

Architectural evolution: Manila's architects work within the constraints typical of a developing country, using local materials and forging their own national identity. The country's most famous architect is Leandro Locsin, whose Cultural Center of the Philippines has already become a Manila landmark with its fluted sides that soar skyward. Locsin's style illustrates the best in Philippino architecture: economy, elegance, and a blend of influences. Architect Francisco Mariano explains that Philippino architects draw from many traditions, especially their Spanish colonial heritage. At the same time, they "have a tendency to look toward current trends in the U.S.," says architect Rolando Mercado. With foreign architects serving as catalysts for change, Mercado sees Philippine architects becoming more responsive to energy and environmental demands and more open to fresh design approaches. *Teresa Albor, a contributor to* Business Week *based in Asia.*

Big Questions Still Unanswered About Nation's Direction

Sumida Culture Factory by Itsuko Hasegawa (1); Fukuoka Airport by HOK (2); and fashion gallery by Shigeru Ban (3).

Economic outlook: Though the Japanese press reports that the country's construction industry has hit *nabezoko* or rock bottom, financial analysts at Barclays de Zoete Wedd (BZW) warn that the worst is yet to come, especially for private development. Japan's GDP is expected to increase 1.2 percent in 1994, an improvement on last year's no growth. But the rate for new orders in private-sector construction fell 22 percent in 1993 and is expected to drop another 19 percent in 1994. With increased demand from commercial clients estimated to be at least 12 to 18 months away, experts predict that it will take more than economic growth to prompt investors to start building again.

Opportunity knocks: While private construction is down, the total construction market in Japan still represents a huge opportunity. According to a report by the U.S. Embassy in Tokyo, overall demand for construction in Japan hit close to $900 billion in 1993, an increase of 4.8 percent over 1992, despite a sagging economy. By the year 2000, total Japanese construction investment should exceed $1 trillion dollars annually.

Commercial market: Due to overbuilding in the major cities during the 1980s, the need for new offices is not expected to pick up until the 21st century. And the few office projects coming out of the ground now were designed in the final days of Japan's "bubble economy." While most plans from the 1980s for resorts and golf clubs have been canceled, some shopping centers and small commercial ventures are inching forward.

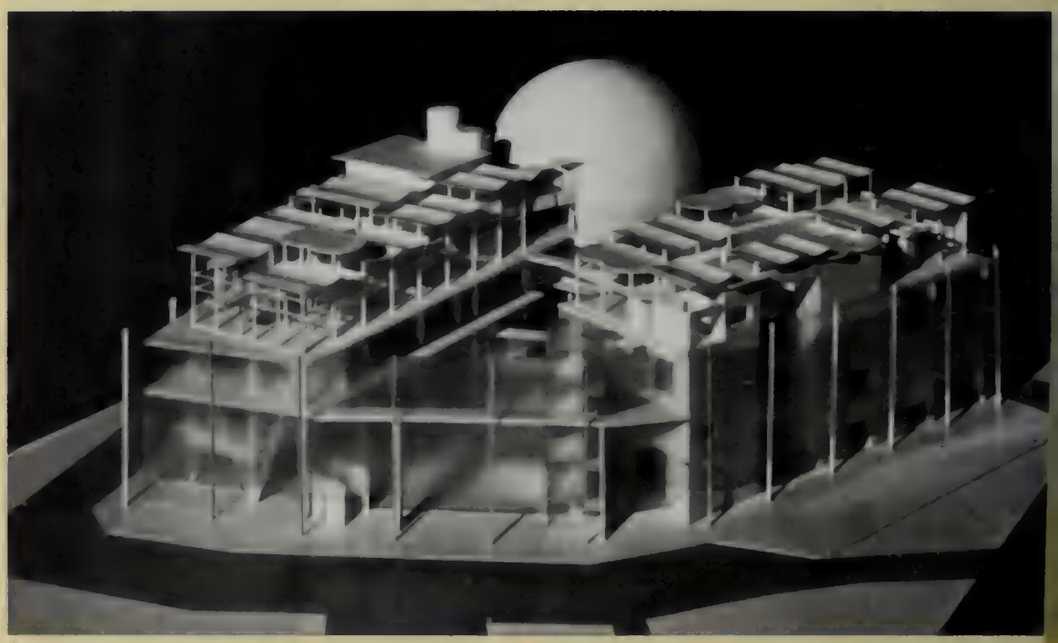
Public sector: Though public works declined by 11 percent in 1993, BZW anticipates up to a 15 percent rise in 1994. This increase is mostly driven by government attempts to jump-start the economy with a range of projects—from dam construction to building sports domes, schools, and community centers like architect Itsuko Hasegawa's 91,000-sq-ft Sumida Culture Factory now under construction in Tokyo.

Opening up the industry: Pressured by the U.S. government, Japan agreed to open its construction market to foreign contractors, [illegible] under the auspices of the Projects Arrangements [illegible] this agreement [illegible] by 1991, [illegible] projects have required architectural services. The first MPA project, the Tokyo Telecom Center, now under construction, was awarded to Hellmuth, Obata & Kassabaum (HOK) and Nippon Sogo Architects. Now HOK is working on three other MPA projects, including the 820,000-sq-ft Fukuoka International Airport designed with Azusa Sekkei.

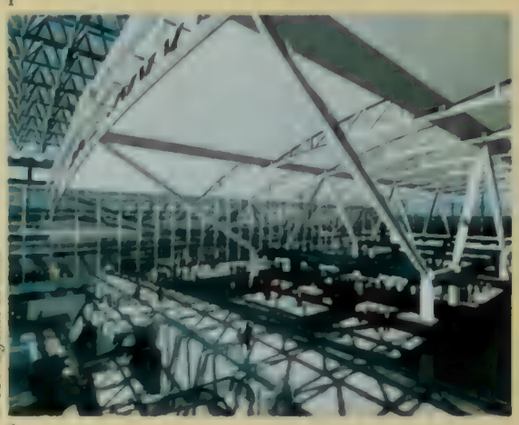
Housing: Another growth sector is housing. The 1980s market for luxury and second homes may have petered out, but affordable housing is going strong since land values have dropped considerably and housing loan rates, still at an all-time low, are not expected to rise beyond 4.5 percent in 1994, according to analysts at CF First Boston (Japan).

Trouble in paradise: While the big-name atelier designers have plenty of work, small firms and those who depended on the speculative jobs of the bubble period have been hard [illegible]. For the most part, firms large and small cope by reshuffling their workforce and broadening their services with interior projects, renovations, and drafting jobs. Though many Japanese architects would like to enter the thriving market in Southeast Asia, the strength of the yen has made Japanese architects' fees much higher than their counterparts' in other Asian lands.

Silver linings: While there are fewer jobs to go around these days, the effect is not all bad. Less and hungry contractors are now willing to give better prices even for small, avant-garde projects that they shunned during the bubble period. For example, solo practitioner Shigeru Ban recently completed an 860-sq-ft gallery in Tokyo for fashion designer Issey Miyake that was built in two months using inexpensive elements such as paper-tube columns. *Naomi R. Pollock*

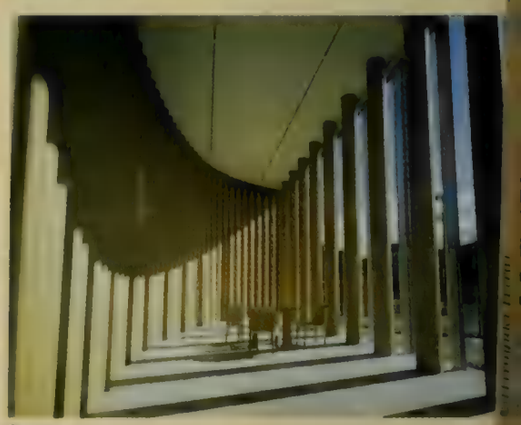


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East Meets West: When Architects Collaborate

Learning to collaborate with architects from distant countries is a key to success in Asia. Elizabeth Padjen reports on ways to make these long-distance relationships work.

By Elizabeth Padjen

If collaborating with a firm on the other side of town can be risky business, then what are the chances of establishing a good relationship with architects half a world away? The ability to form successful collaborations, though, is a key to success in the Asian market, where working with local firms is usually a necessity because of legal restrictions, economics, or sheer pragmatism.

Most American firms practicing in the Pacific Rim provide "front end" services—schematic design and design development—with participation in the working-drawing and construction phases reduced to periodic reviews for quality control. Salaries in countries where local architects may earn a few hundred dollars a month and where total fees are typically 3 to 4 percent of construction costs often make this arrangement the only financially feasible method. But even in more expensive markets like Hong Kong and Japan, most Americans readily concede that local firms, with their knowledge of regulations, conditions, and local construction practices, are the most appropriate providers of construction services.

Such collaboration favors American firms that can offer superior design skills or knowledge of technical building types. It also makes firm size less significant, which means that entry into the Asian market is realistic for some small and mid-size firms. "Collaboration is a way to work on large projects without changing the scale of your practice," notes Nelson Chen, principal of Wong Chen Associates in Hong Kong.

For example, Kyu Sung Woo, who has worked on several projects in Korea, maintains a 10-person firm in Cambridge, Mass., and Bob Fox, principal of Fox Hawaii, has practiced throughout the region for 20 years with a staff of just five in Honolulu.

While most Asian architects, particularly in less developed regions, welcome these collaborations as learning opportunities, resentment is occasionally a problem. "By doing the design work, we're taking the cream off the top," admits Fox. Resentment can create some ugly situations, as Fox has learned firsthand. On one job, he discovered that an effort to have him blacklisted by a professional organization was spearheaded by his own local associate. American architects who use tourist visas instead of the more-difficult-to-get business visas may find themselves especially vulnerable in these situations—such was the experience of a landscape architect doing work in Thailand, who had to buy his way out of jail.

Elizabeth Padjen is president of Padjen Architects in Topsfield, Massachusetts.

Encouraging teamwork

Other architects have encountered more subtle forms of resentment, with their efforts undermined by local staff. Encouraging teamwork is one way to avoid some of these problems. Greg Coghill, a principal of Wimberly Allison Tong & Goo, a firm with more than 30 years of experience in the Pacific Rim, encourages the "intertwining" of the participants by exchanging key staff members during the design phase and soliciting input from the local architects that will promote a sense of joint authorship. Cambridge Seven Associates took the concept of teamwork quite literally during the design-development phase of the Osaka Aquarium. Staff and consultants were sent to Japan, where four joint teams organized by discipline (design, structural, mechanical, and life safety) worked simultaneously in one room.

Though it may seem obvious, professional respect and courtesy are critically important. "Condescending and patronizing attitudes must be avoided," notes John Lummis, an American architect who has worked in Indonesia for 10 years. Lummis reports that his Indonesian colleagues cite lack of professional respect as the main reason why collaborations go wrong.

Problems can begin at the start. "They are very literal in their interpretation," says Henry Abernathy, Jr., of the Hillier Group, referring to the reaction of Vietnamese architects to concept studies. "We think: This is just illustrative of the potential. They think: This is the design." Jusuf Setiadi, of Airmas Asri, architects in Jakarta, notes that Indonesian planning and building codes can be a source of difficulty. "One [person's] interpretation can be totally different from another's because the regulations are not very clear."





Nanhai Oil Building in Shenzen, China, by the Nadel Partnership and Nanhai Design Institute (top), and the Bali Nikko resort by WATG and Airmas Asri (above).

Heavier emphasis on construction supervision than on drawings is typical throughout much of Asia, resulting in a more open, changeable process, observes Steve Brubaker of Hellmuth Obata & Kassabaum. Changes in scope and program are very common, and the tendency of American firms to continually ask for fees to cover additional services is not well received. Ki Suh Park, managing partner at Gruen Associates, says, "Conserve your energy at the beginning of a project, and assume lots of changes."

Setiadi suggest that many problems can be avoided by relying more on the input of local

Continued on page 25

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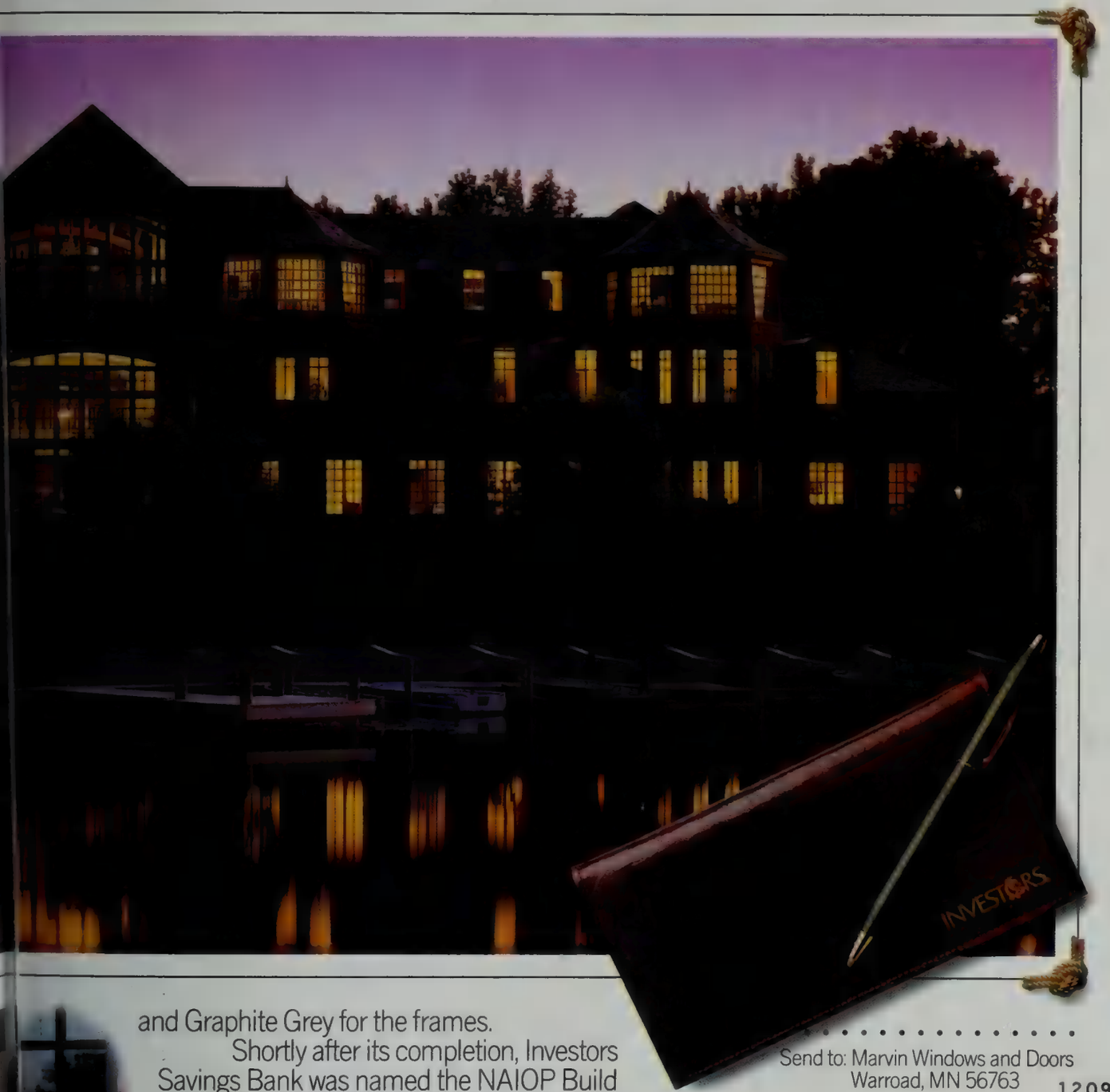
It looks less like a bank and more like an English country manor. But the charm of the Investors Savings Bank belies the challenges its design and construction presented. Particularly to Marvin Windows and Doors.

For one thing, fast-track construction scheduling was necessary due to constantly evolving design constraints. For another, it wasn't until thermal efficiency, condensation resistance and aesthetics were factored in that wood was chosen over aluminum. Consequently, Marvin wasn't selected for the job until construction was underway, making manufacturing and delivery deadlines extremely tight.



But Marvin's biggest challenge proved to be the building's three massive window and door assemblies, the largest of which measures 28 feet wide by 30 feet high. Using a combination of sturdy Magnum Double-Hungs and French Doors, Marvin not only built them on schedule, but also engineered them prior to delivery to guarantee they would withstand the strong, prevailing winds off the lake. And, like all 177 of the bank's other made-to-fit windows and doors, they were built with features designed specifically for the project. Features such as authentic divided lites, interior windows and doors glazed to match those on the exterior and a durable, factory applied finish in two complementary colors; Midnight Teal for the sa

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and Graphite Grey for the frames.

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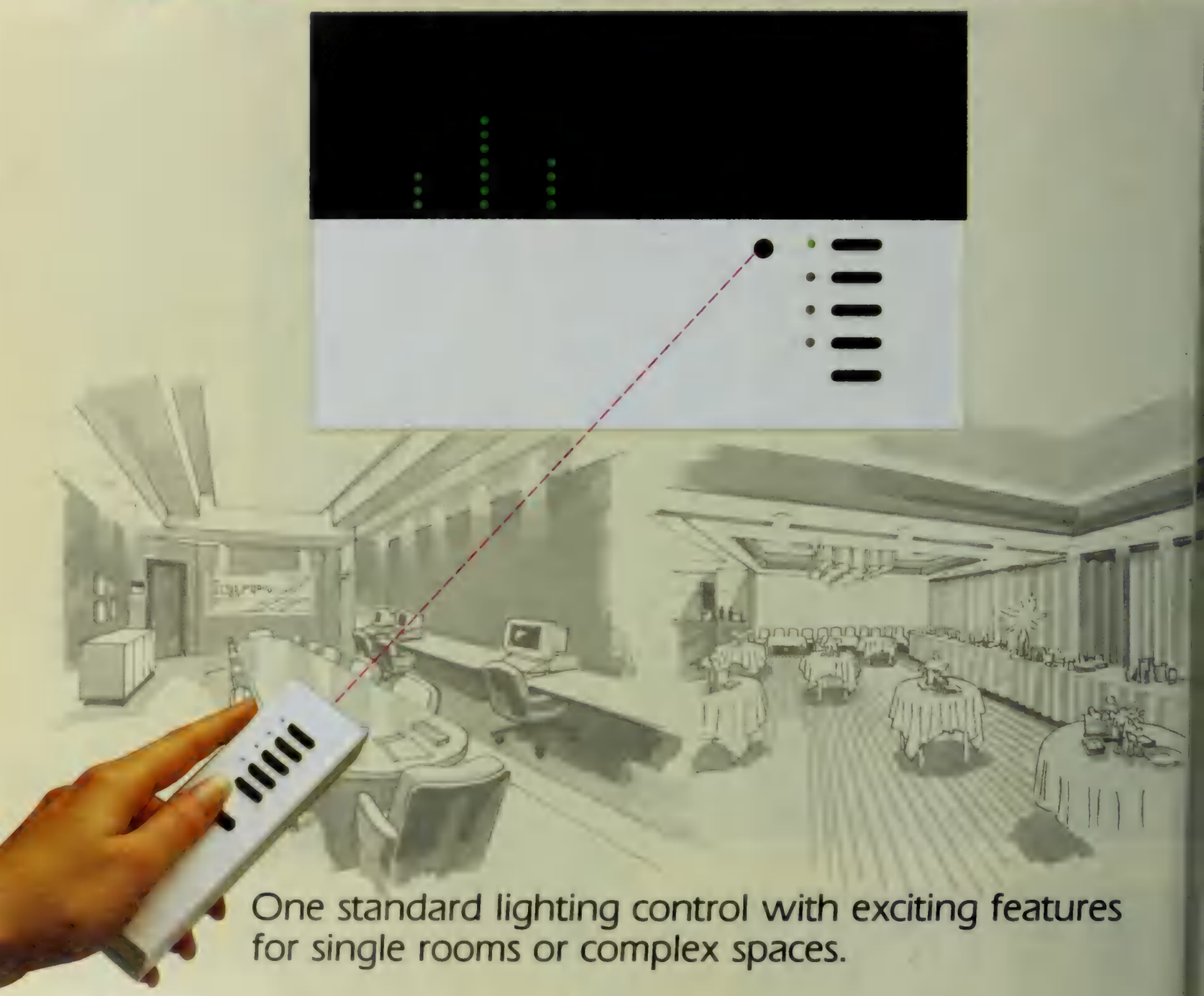
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Continued from page 21
architects. "A common mistake of foreign firms is that they handle the project as though it were in their own country," he says.

When friction occurs

Foreign firms may also need to reconsider their approach to conflict resolution when problems do arise. "When there is friction, the worst thing is to think in the short term," cautions Yamaki. "In a country like Japan, a bad reputation can be devastating."

Though most American architects feel that enhanced design development is the minimum necessary for project success in much of Asia, local architects are sometimes surprised at the amount of information that is included. Herbert Nadel of The Nadel Partnership recalls the delight of one Chinese architect on reviewing Nadel's work: "You've done all my work and I'm still getting paid!"

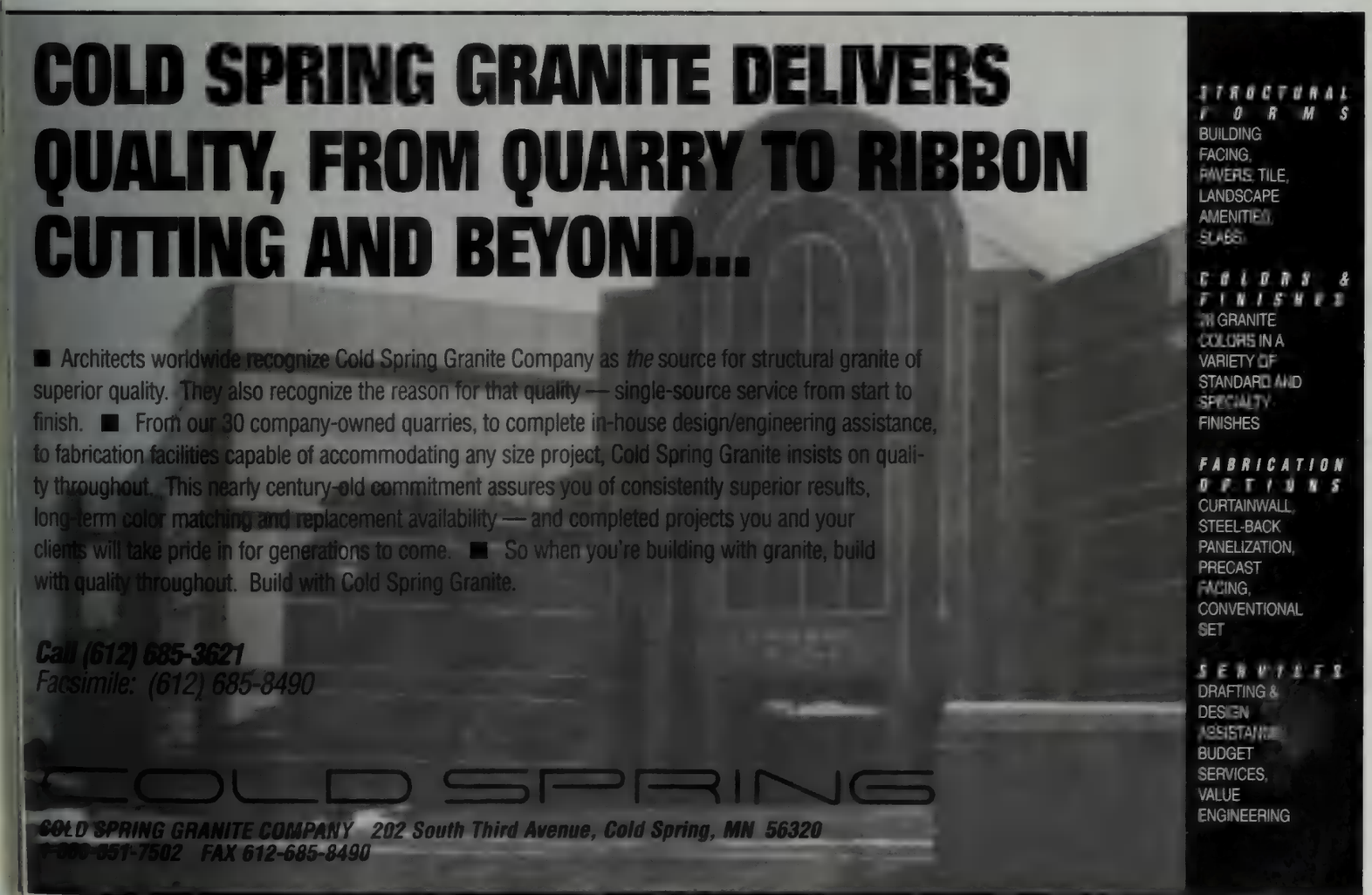
Variations in working relationships between local and foreign architects usually occur during the construction-documention and administration phases of the project as a result of accommodations made to local conditions. To avoid misunderstandings, Nelson Chen defines the scope of work for the entire consultant team in a checklist attached to the letters of agreement.

Wu Bao Xi, vice president of the Anhui Design Institute, which is currently working with Stubbins on some projects, makes it clear that technical expertise and willingness to share knowledge are important criteria for selecting a foreign firm. He also says that both partners must have a "mutual interest in culture, technology, and financial profit."

A new kind of collaboration can be seen in the Chi-Am Consortium, an association of four Chinese design institutes with the American firms of Gensler and Associates; Wimberly Allison Tong & Goo; HOK; Taliesin Architects; and Dworsky International. Recently established, the consortium has yet to land a project, but will provide a venue for flexible collaborations among its members, based on interest, related project experience, and work loads.

While there is no shortage of local architects willing to collaborate with foreign firms, the trick is to find the right ones. "China is a country of one billion people united by the common dream of becoming millionaires overnight," says Nelson Chen. Similarly, everyone in Vietnam claims to have great connections in the government, observes Henry Abernathy. As a result, it is hard to know what to believe. "Architects in Vietnam wear several hats," he says. "They may be government officials and in private enterprise. Sometimes you don't know which hat you're talking to."

Wu Bao Xi, noting that Americans have a reputation for inflexibility, urges greater understanding and willingness to learn. But the best advice probably comes from Herb McLaughlin, of Kaplan McLaughlin Diaz, and a veteran of many Pacific Rim projects. He puts it simply: "Make the fewest possible assumptions."■



Circle 35 on inquiry card

A Mile Long and Ready for Take-off

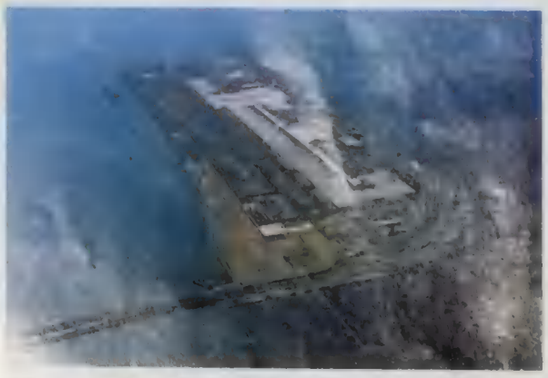


© *Kazuo Natori photos, except as noted*

Ideally, an airport should celebrate travel the way railway stations a ocean liners did in the past. Unfortunately, few do. But come September, when Kansai International Airport opens for business outside Osaka, travelers can experience that wonder once again. Th result of an international competition, the $12.4-billion building was designed by a consortium spearheaded by Renzo Piano Building Workshop Japan.

Because of Japan's mountainous terrain and population density, finding a flat area large enough to accommodate the 984,240-square foot airport and its runway was not easy. The solution was to set th complex on a landfill island in Osaka Bay, which had the added ben of isolating the airport's air and noise pollution and allowing round-the-clock operation. Creating this island was no easy task and maintaining it is an on-going process. In response to the island's co tinuing settlement, a "jack up system" raises or lowers 900 above-grade building columns, as sand piles squeeze out water and compact weak soil at the sea bottom 59 feet below. Until the 2-mile double-decker bridge linking island and mainland opened in April, 10,000 workers had to be ferried by boat to and from the island dai

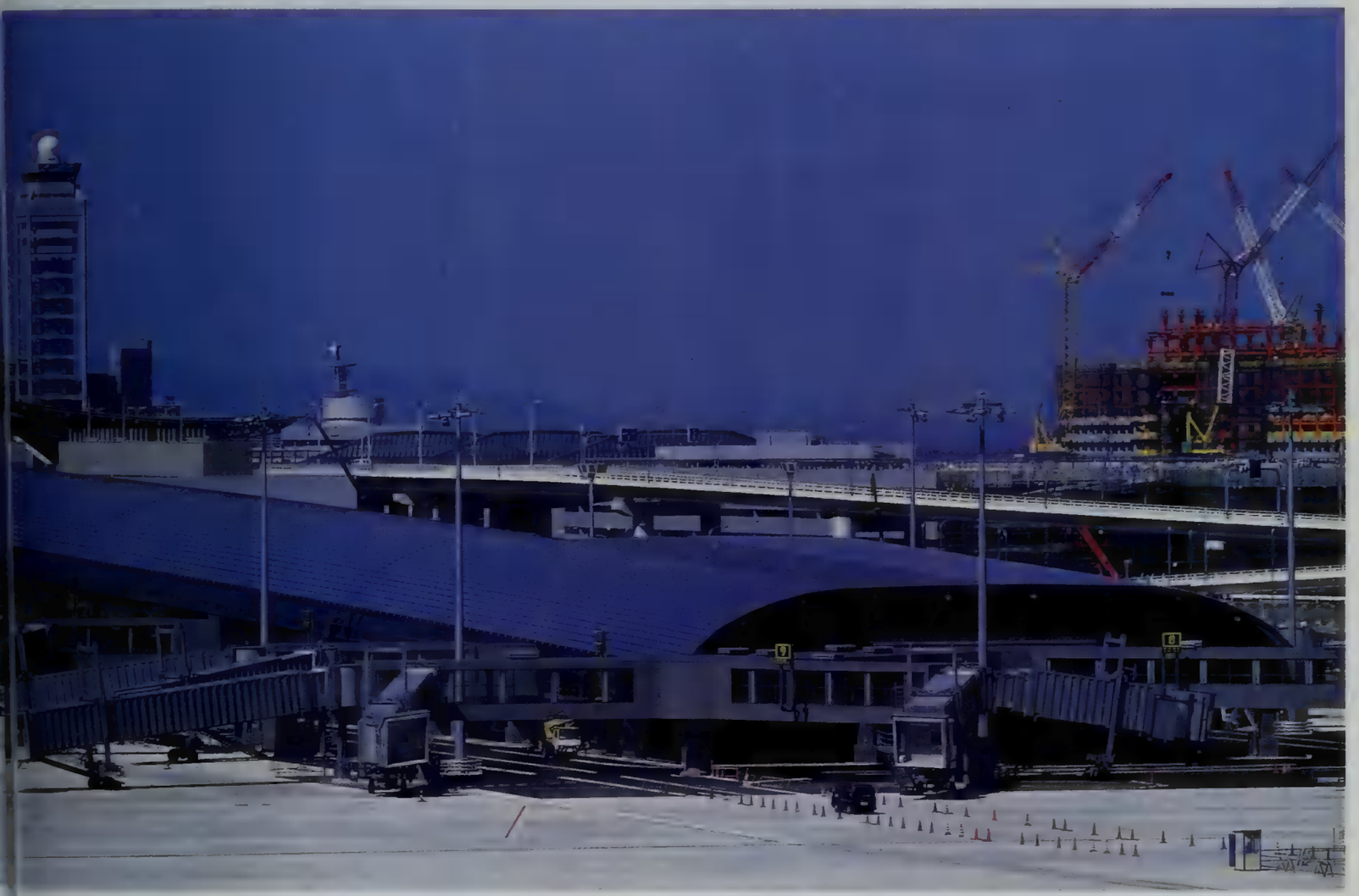
© *Kinji Hiwatashi*



airport cost $12.4 billion to build.

Renzo Piano's Kansai Airport design makes a grand arrival on a landfill island in Osaka Bay.

Kansai International Airport
Passenger Terminal Building
Osaka, Japan
Renzo Piano Building Workshop
Japan and Ove Arup & Partners, Architects

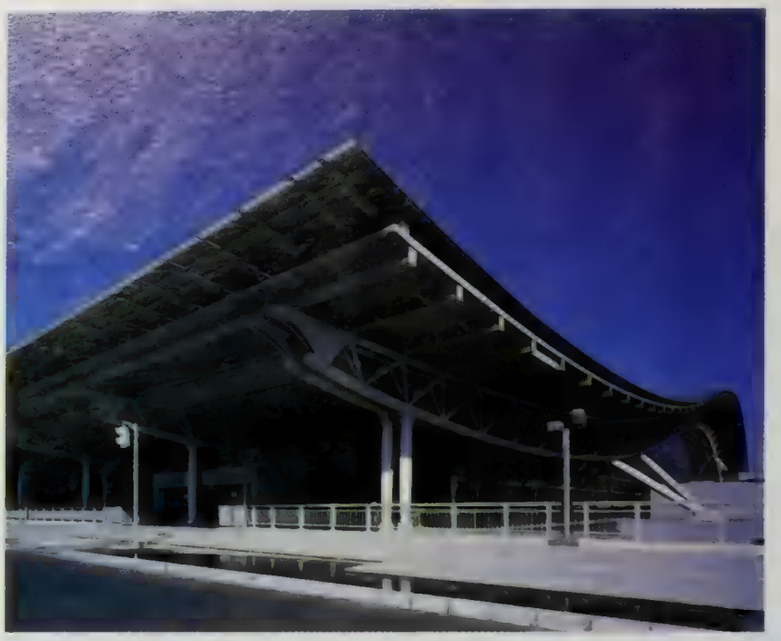


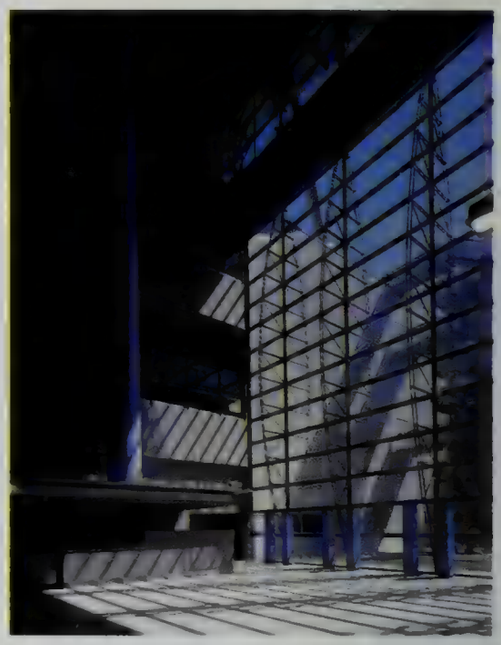
For Piano, the island site was "an occasion to find a new form since the location does not require the same logic as a building in the city," explains Piano's partner-in-charge Noriaki Okabe. Conceived by rotating a series of identically arched sections around an imaginary pivot 10.2 miles away, the mile-long building's sloping, toroidal wings appear almost embedded in the earth. At the center of Piano's symmetrical scheme is the passenger terminal from which wings fan out 2,231 feet in either direction. Unlike the labyrinthine subway stations beneath the streets of Tokyo and Osaka, Piano's solution turns a complicated network of arrival and departure gates, security checks, and baggage-handling units into a user-friendly transit hub. The "canyon," a four-story, 88,802-square-foot entry hall filled with sunlight and greenery, reveals the building's vertical organization: a sandwich of international and domestic facilities enabling travelers to transfer without effort from one flight to another.

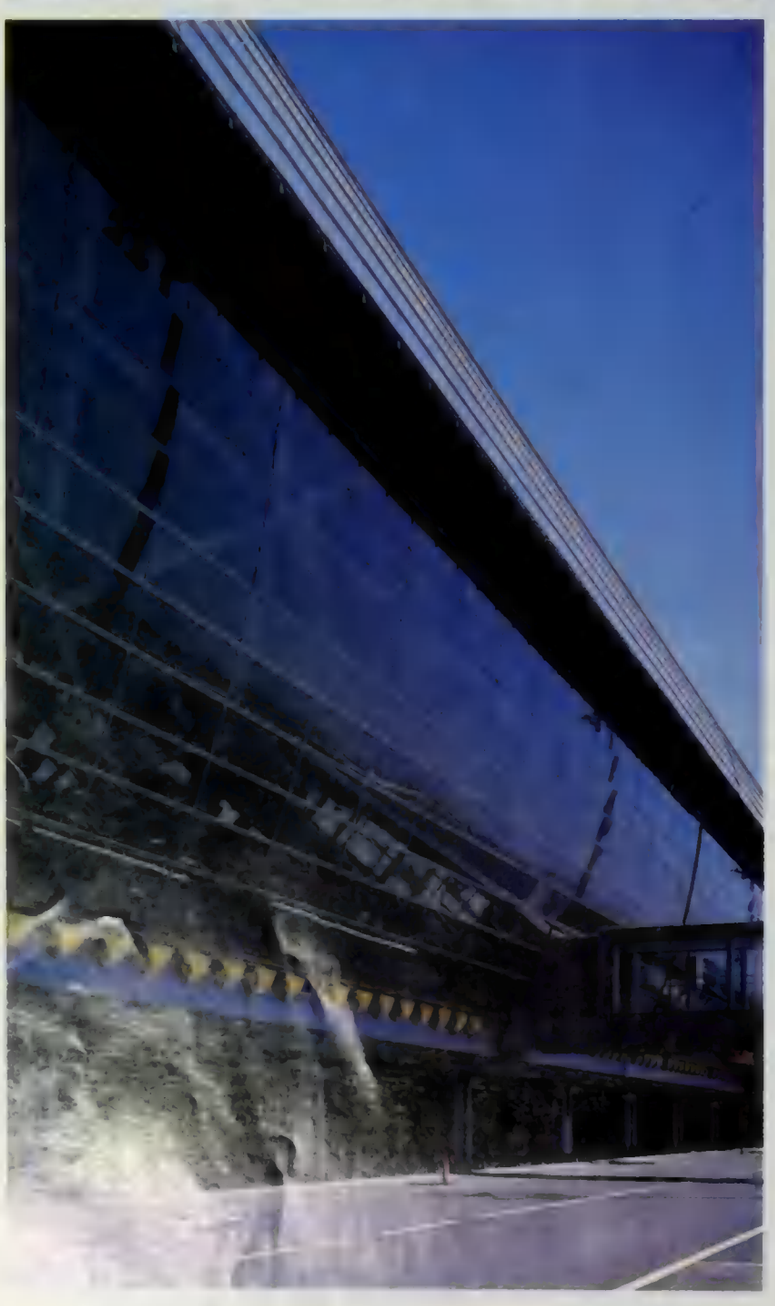
Even the terminal's aerodynamic outline helps orient travelers by directing them from "landside" to "airside." To minimize interior columns and partitions, the roof is supported by 272-foot-long trusses composed of tangential arcs. The three-dimensional members behave structurally like arches, but their unique profile follows the invisible flow of air controlling the terminal's top floor climate. Here suspended "open-air ducts" guide supply air, fed by jet nozzles, from one end of the vast space to the other. To limit the maintenance of ceiling-mounted equipment and reduce roof load—an important consideration in earthquake-prone Japan—all other elements are located lower down. "Cabins" housing check-in counters, fire-fighting apparatus, and light fixtures divide the room and eliminate the need for fire walls.

The trusses lead into the wings' shell structure, a fusion of steel ribs and building skin. At "airside," 41 boarding bridges and arrival/departure lounges, accessible by automated guided transport, stretch from one wing tip to the other. Encased in a continuous glass surface, the wings forge a direct link between passenger, plane, and sky.

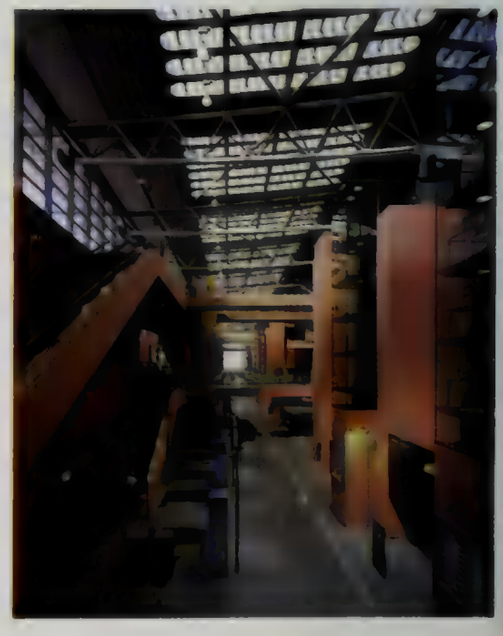
The island's railway station and control tower, which were not designed by Piano, muddy the airport's visual impact, but detract little from the accomplishment. Like the architect's Pompidou Center, the Kansai airport presents an array of technical innovations and an overall form that takes one's breath away. *Naomi R. Pollock*

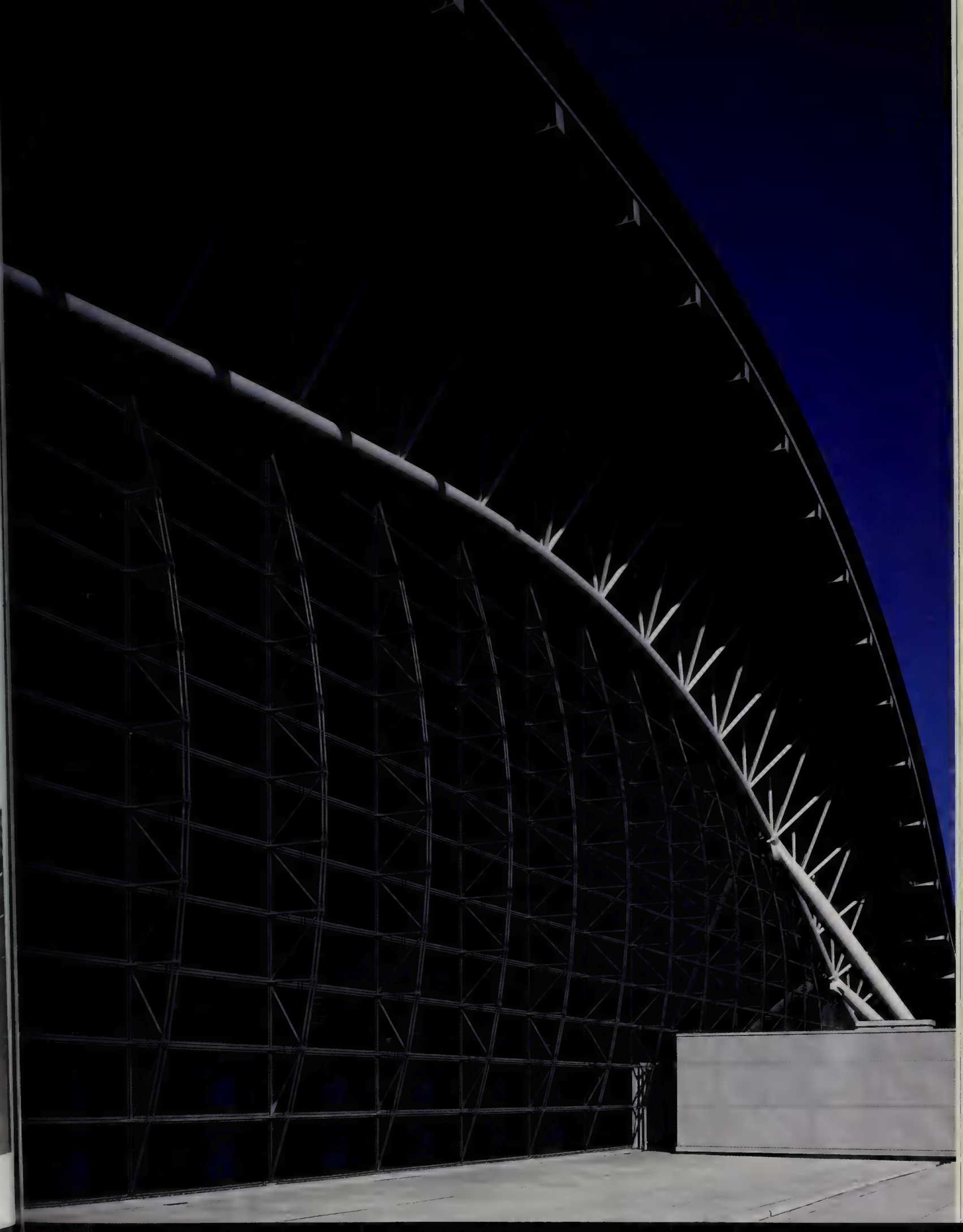


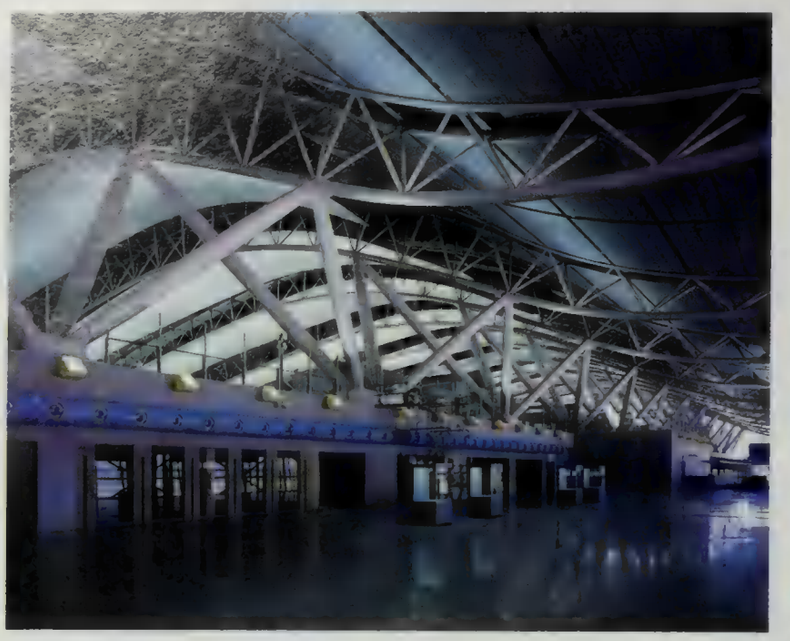


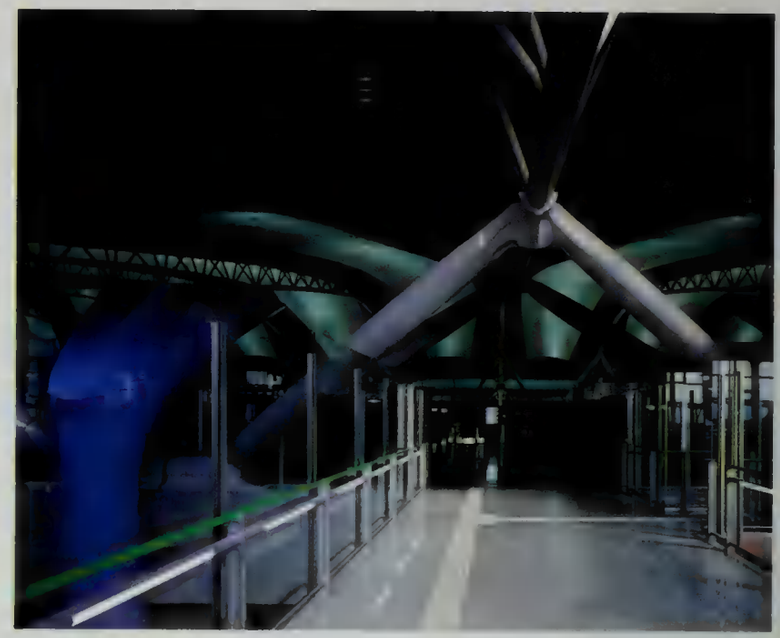


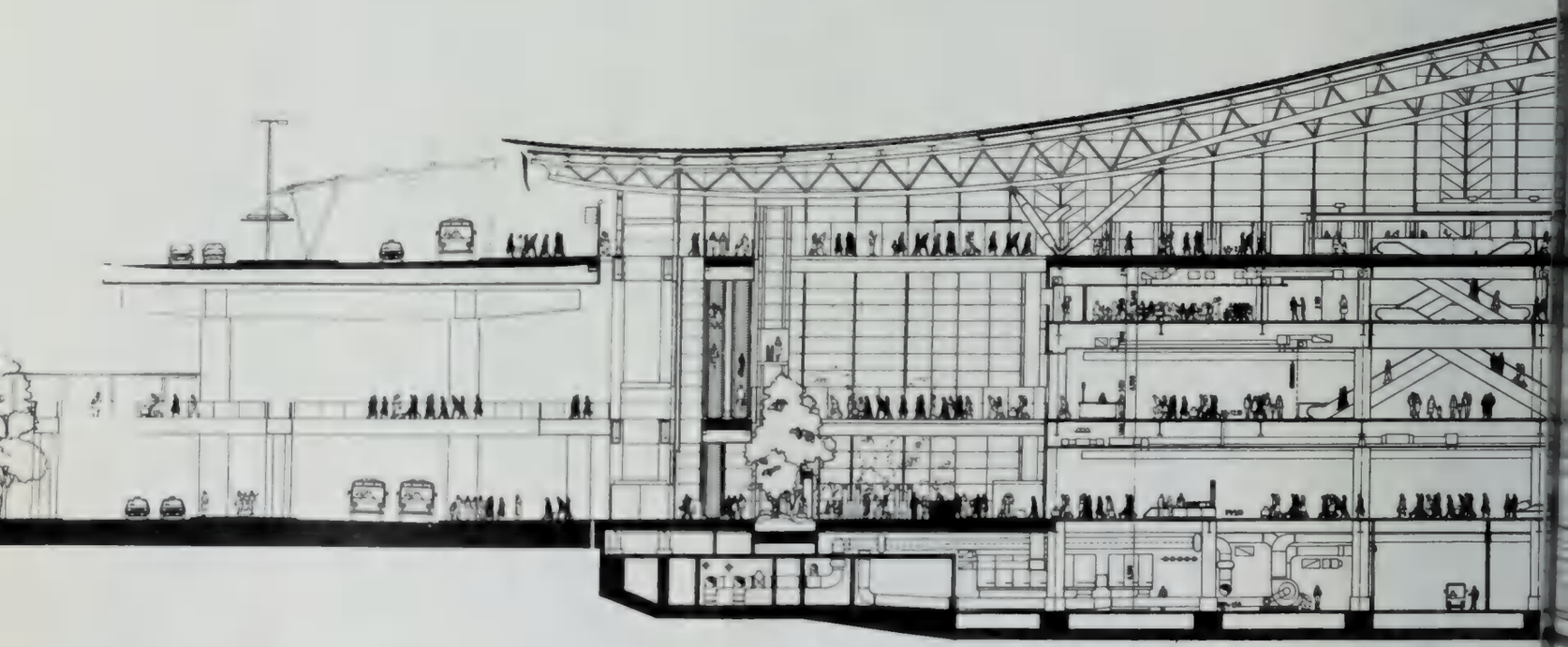
The swooping roof of the passenger terminal building guides travelers from the "landside" entrance (top left) to the "airside" departure gates, where the building's stainless-steel roof slides down to meet heat-absorbing glass panels of uniform shape and size (left). On entering the building, passengers orient themselves in the four-story canyon (below). Bow trusses running the height of the building's glazed end walls were designed with sliding joints to allow the roof to move independently in the event of an earthquake (above and opposite).



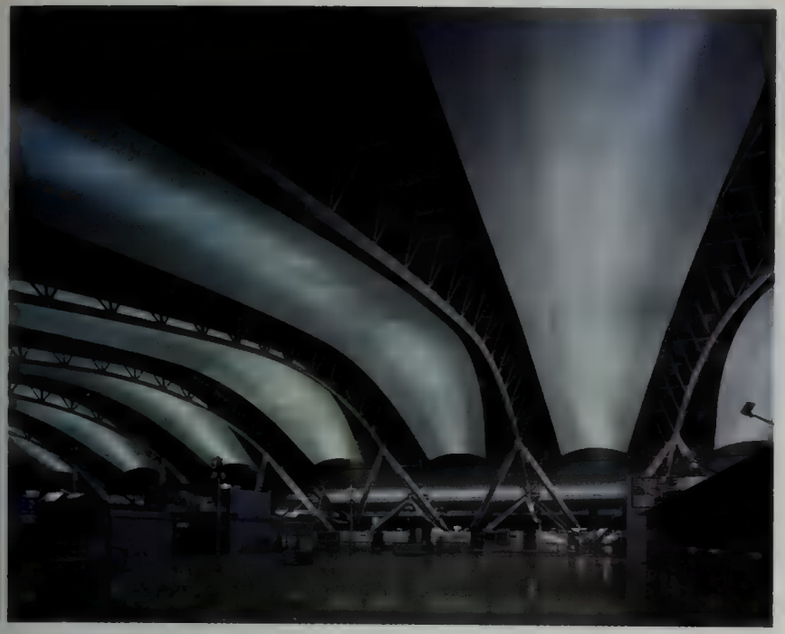


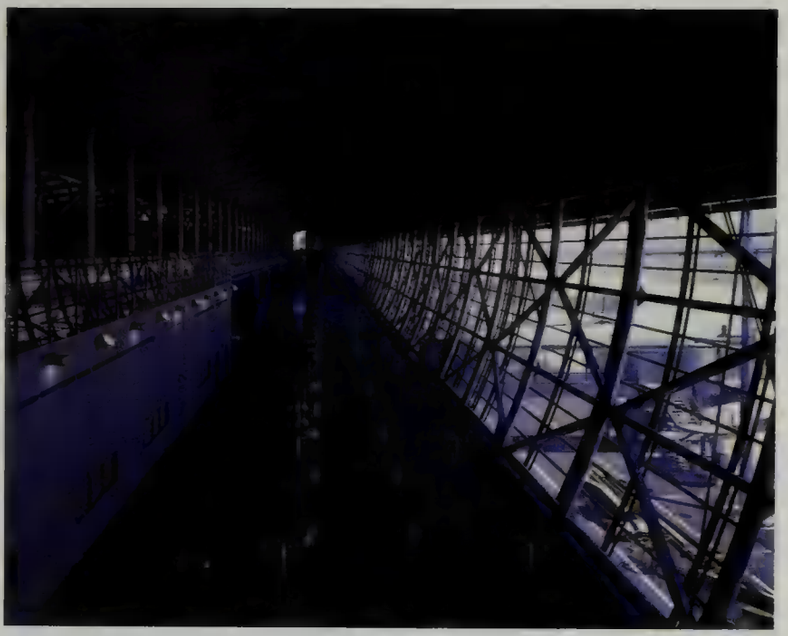


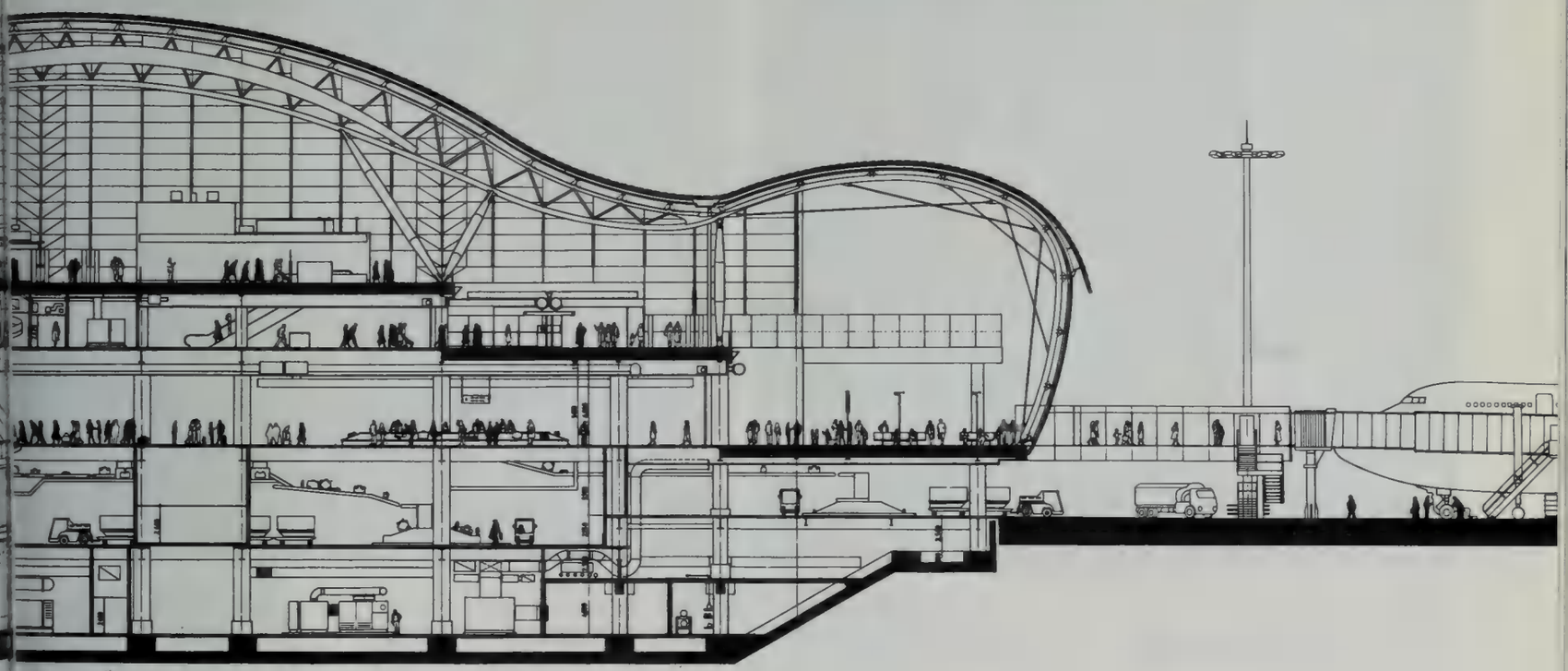




Though the three-dimensional trusses supporting the roof behave like arches, their unique profile was generated by inside-air flow. Fully welded connections give the trusses a soft, floral appearance (top right). To control the climate of the fourth floor, air is blown up from basement-level mechanical rooms by [illegible] and distributed by [illegible] ducts (opposite left). [illegible] smooth surfaces of the Teflon-coated, glass-reinforced fiber ducts prevent dust from collecting, their white surfaces act like reflectors, eliminating the need for ceiling-mounted lamps and filling the space with muted light. Direct lighting is provided by fixtures attached to the international departure check-in counter "cabins," which divide the 970,000-square-foot space (top left). As part of the building's sophisticated life-safety system, each check-in cabin has its own fire-protection system. Since the rest of the floor is free of restaurants and other fire hazards, there was no need for passenger-impeding fire walls. In the third-floor arrival/departure lounges running the length of the passenger-terminal building, "technical trees" support metal-halide lamps, loudspeakers, and video monitors (opposite right).







Credits
Kansai International Airport
Osaka, Japan
Architects: *Renzo Piano Building Workshop Paris (competition winning design)—Renzo Piano, Noriaki Okabe, architects; Renzo Piano Building Workshop Japan in collaboration with Ove Arup & Partners (passenger-terminal design)—Renzo Piano, Noriaki Okabe, Peter Rice architects*
Site Supervision: *Nikken Sekkei*
Consultants: *Nikken Sekkei—Kimiaki Minai (structural engineer); Aeroports de Paris—Paul Andreu (moving elements); Japan Airport Consultants—Misao Matsumoto (airside planning)*
Constructors: *North Passenger Terminal Building Joint Venture; South Area Joint Venture*

The Great Leap Skyward

In a monumental effort to modernize, China is building an impressive number of high rises, some of which will be among the tallest in the world. Architects from around the globe are now working





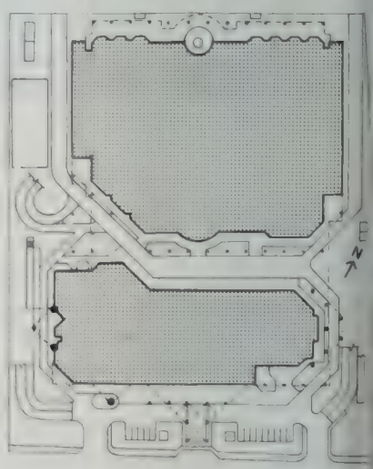
China Tower #1
T.R. Hamzah & Yeang

Continuing their exploration of ways to create highrises that respond to climatic forces [RECORD, March 1993, Pacific Rim pages 26-31], Malaysian architect Ken Yeang and his associates at T.R. Hamzah & Yeang have designed a hotel tower on Hainan Island that harnesses the power of the wind. Its oval form is oriented to receive prevailing breezes and duct them through ceiling plenums to ventilate the building's interior. A wind generator on the roof of the building provides energy for hot-water heating and emergency lights, while sun scoops at intermittent openings on the sides of the building and a skylight on the top bring daylight to a central atrium. A reinforced concrete-frame structure, this 35-story building has 460,000 square feet of gross space.



868 Towers
Beyond Space Group

For a 325,000 square-foot site in the city of Haikou on Hainan Island, Korean architect Ryu Choon Soo and his firm, Beyond Space Group, designed a mixed-use complex that couples an 86-story office and hotel tower with a 68-story apartment tower. The architects play one tower off the other, creating contrasts in exterior materials, plan, height, and structure. A common base includes department stores, shopping arcades, restaurants, convention halls, a multi-use theater, and some sports facilities.



The entire complex includes approximately 4.3 million square feet of floor area.

on plans for these skyscrapers, which will be located throughout the nation. Designs for this new generation of tall buildings address a range of key issues—from exploiting innovative technology and responding to the local climate to incorporating Chinese symbolism and creating new landmarks. The following overview provides a brief look at four important projects currently on the boards.

© Steinkamp/Ballogg



Jin Mao Building SOM/Chicago

Designed by Skidmore, Owings & Merrill's Chicago office and the Shanghai Institute of Architectural Design and Research, the 88-story Jin Mao office and hotel tower will be the centerpiece of Shanghai's emerging Pudong district when it is completed in 1998. At 1,375 feet high, the building would be the second tallest in the world if completed today. The building organizes its functions vertically with the office portion occupying the first 50 floors and a Grand Hyatt Hotel with a 31-story atrium on the upper stories. Since the tower gets narrower as it goes up, this scheme offers larger floor plates to office tenants and great views for hotel guests. Told by the client, the China Shanghai Foreign Trade Centre Co., to use the lucky number eight in their design, the architects devised a pagoda-like system of tower segments and setbacks based on the number. The building has a composite concrete and steel frame; lateral stiffness comes from an octagonal concrete core and eight concrete and steel columns. A curtain wall of glass and stainless steel will enclose the building, says SOM design partner Adrian Smith.

© Steinkamp/Ballogg



Shekou Harbor Loebl Schlossman and Hackl

Set on a peninsula jutting into the Pearl River basin, the mixed-use Shekou Harbor complex will be an important transit and commercial hub for the city of Shenzen and southern China. Designed by Chicago-based Loebl Schlossman and Hackl (LSH) in conjunction with the Shenzen University Institute of Architectural Design, the project includes a 40-story office tower and a four-story transit and retail structure linked to the area's system of ferries, buses, cars, and (in the future) light-rail trains. The tower's boat-shaped plan and sail-like curtainwall recall the area's seafaring history, says Don Hackl, president of LSH. Making the most of the Chinese love of symbolism, Hackl oriented the "bow" and "stern" of the tower's hull to the site's key land and sea approaches. To create the stretched sail on the tower's facade, the architects specified three kinds of curtain wall that will seem to be layered one on top of the other: two of reflective glass and one a boldly mullioned, low-E-glass skin. Construction is set to begin in early 1995 and is scheduled to be completed in mid-1996.

Civic Booster



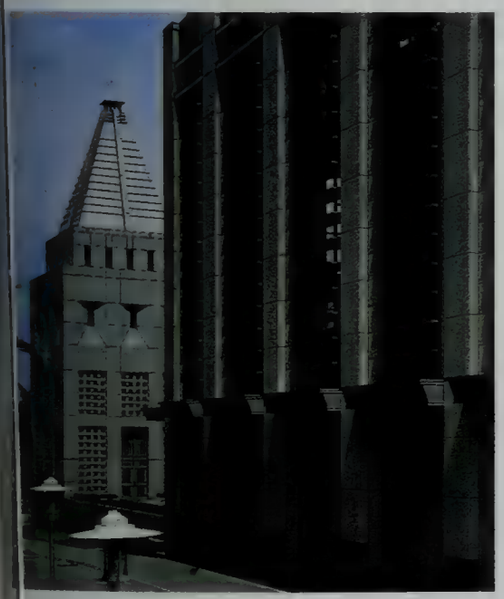
Bank Niaga Headquarters
Jakarta, Indonesia
Kohn Pedersen Fox Associates and Wiratman & Associates, Architects

© CI&A Photography photos



1





Set in a city intoxicated by rapid (and often cheap) development, the new Bank Niaga building is a model of a more responsible design—one that accommodates the civic realm, as well as private enterprise. While Jakarta rushes headlong into the future—sprouting highrises that seem stolen from Houston or Hong Kong—the Bank Niaga complex is firmly rooted in its site and the emerging culture of modern Indonesia.

As designed by Kohn Pedersen Fox Associates (KPF) and the Indonesian architecture/engineering firm of Wiratman & Associates, the project is a set of three buildings—office tower (1), banking hall (2), and mosque (3)—placed on a site divided into four quadrants. By keeping the fourth quadrant open as a garden and landscaping the roof of the lowest structure as an outdoor room, the architects created a remarkable quilt of built and natural forms. A circulation loop that includes escalators, elevators, and an outdoor staircase links all of the pieces together on the first three levels, so that office workers, the public, and worshippers can enjoy the complex at the same time.

"Jakarta is a city of boulevards with few secondary streets to speak of," says William Louie, the KPF design partner for the project. "As a result, you end up designing buildings as compounds." What makes the Bank Niaga building unique in this city is that its compound includes outdoor space and invites the public to use it. The building also reinforces the edge of Jalan Sudirman, the hectic boulevard it faces, rather than stepping back from it, as so many new buildings do.

By breaking the program into its three main components, the architects were able to give each its own identity. Limited to a small floorplate for the office building (about 12,500 square feet), they designed a square tower that rises 27 stories and offers two different faces to its surroundings. Looking to the north and east where the older portion of the city lies, it presents a glass-and-aluminum skin protected from the sun by continuous *brises-soleil* made of aluminum. To the south and west, the office tower is wrapped in a light-gray granite with individual *brises-soleil* over each window. This dual approach to the office component creates the impression of two slender towers abutting each other.

For the banking hall, the architects designed a three-story room topped by a winged steel roof resting on a band of clerestory windows. Because the long portion of the hall faces east and direct sunlight, first-floor windows on this side are small squares deeply set into a granite wall; larger windows start about 15 feet above the banking floor. Since Jakarta lies almost on the equator, the north and south sides of the hall get little direct sun and were opened up with generous glazing offering views to the street and the mosque.

Tucked behind the banking hall, the small three-story mosque shares one quadrant of the site with a parking structure whose roof serves as a continuation of the garden behind the office tower. Used mostly by office workers for daily prayers, the mosque is a symbol of this modern project's accommodation of old ways. The mosque's pyramidal roof and the water features in its adjacent gardens allude to the Muslim tradition of building, without imitating specifically Indonesian forms, says James von Klemperer, the senior designer for KPF.

Like almost all highrises in southeast Asia, the Bank Niaga complex is a concrete-frame structure with brick infill plastered on the inside and clad on the outside with curtainwall. Because flooding is a major problem in Jakarta, the building was erected above a series of dykes and a mat foundation. *Clifford A. Pearson*



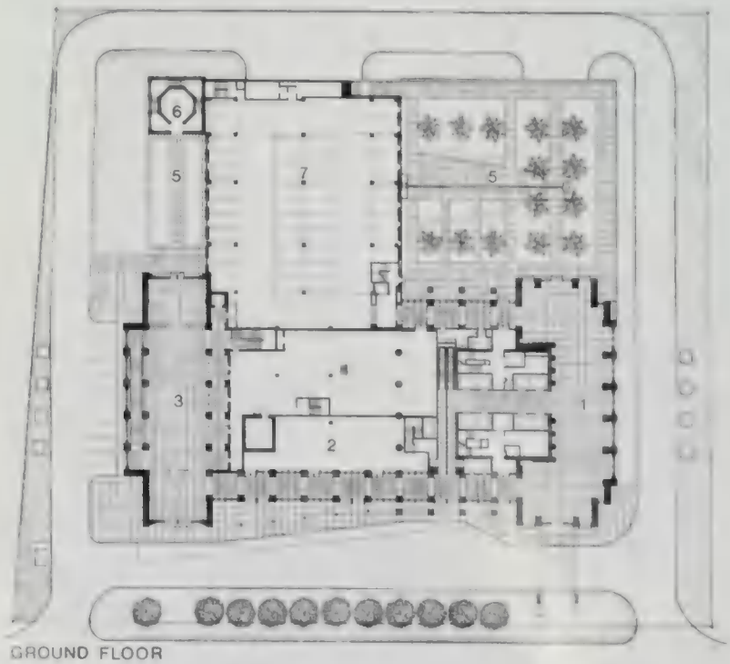
Because local codes limit the amount of reflective glass on highrise buildings and the client did not want tinted glass, fixed metal brises-soleil *were used to protect the building from the strong equatorial sun (previous spread). The wing-roofed banking hall and 27-story office tower look onto one of Jarkarta's main boulevards (previous page, 1 and 2). The pyramid-topped mosque stands behind the banking hall (previous page, 3). Local artisans executed the modern wood- and metalwork in the office lobby (above) and banking hall (opposite).*

Credits

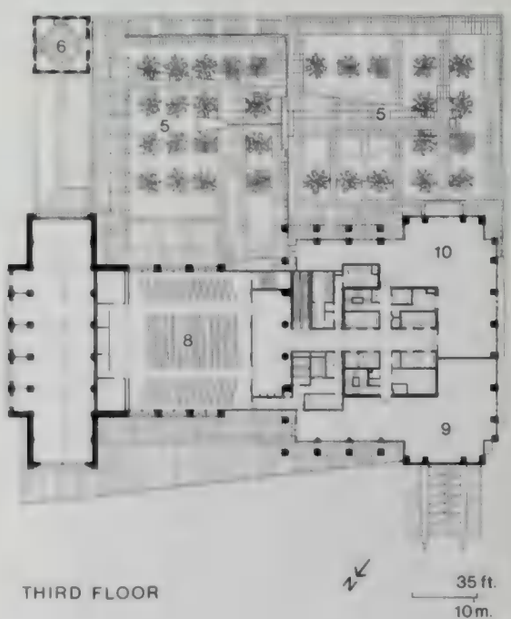
Bank Niaga Headquarters
Jakarta, Indonesia
Architect: *Kohn Pedersen Fox Associates—Robert Cioppa, partner-in-charge; William Louie, design partner; James von Klemperer, senior designer; Roger Cooner, job captain*
Associate Architect and Engineer: *Wiratman & Associates—Wiratman Wangsadinata, president; Tateng K. Djajasudarma, director; Setyo Rahardjo, project manager; Armand H. Tanorie, designer*
General Contractor: *Waskita Karya*

Up Close

Working together. By all accounts, the collaboration between Kohn Pedersen Fox Associates and Wiratman & Associates was extremely successful. Although KPF was primarily responsible for schematic and design-development services and Wiratman for the initial program development and then construction documentation and construction supervision, the two firms in fact worked closely together throughout the project, says Tateng K. Djajasudarma, the director of Wiratman & Associates. During the design phases, Wiratman sent some associates to New York to work in KPF's office, while KPF reciprocated by sending some people to Jakarta during the construction stages. By working so closely together, each firm understood the reasoning behind decisions made by the other and misunderstandings were minimized. "The transfer of knowledge was an important aspect of our relationship with Wiratman," states KPF's James von Klemperer. "We learned that their computer department is more sophisticated than ours—perhaps because they're an A/E firm—while they learned a lot about extending architecture into a project's details and materials," adds von Klemperer. "We also helped them become more adventurous in terms of design." In addition to its architectural work, Wiratman provided engineering services such as structural, mechanical, electrical, and plumbing design. Working with a multi-disciplined firm like Wiratman rather than a set of consultants was another advantage, explains von Klemperer. "We knew that whatever we weren't doing, they were." The two firms are collaborating again on a hotel in Jakarta.

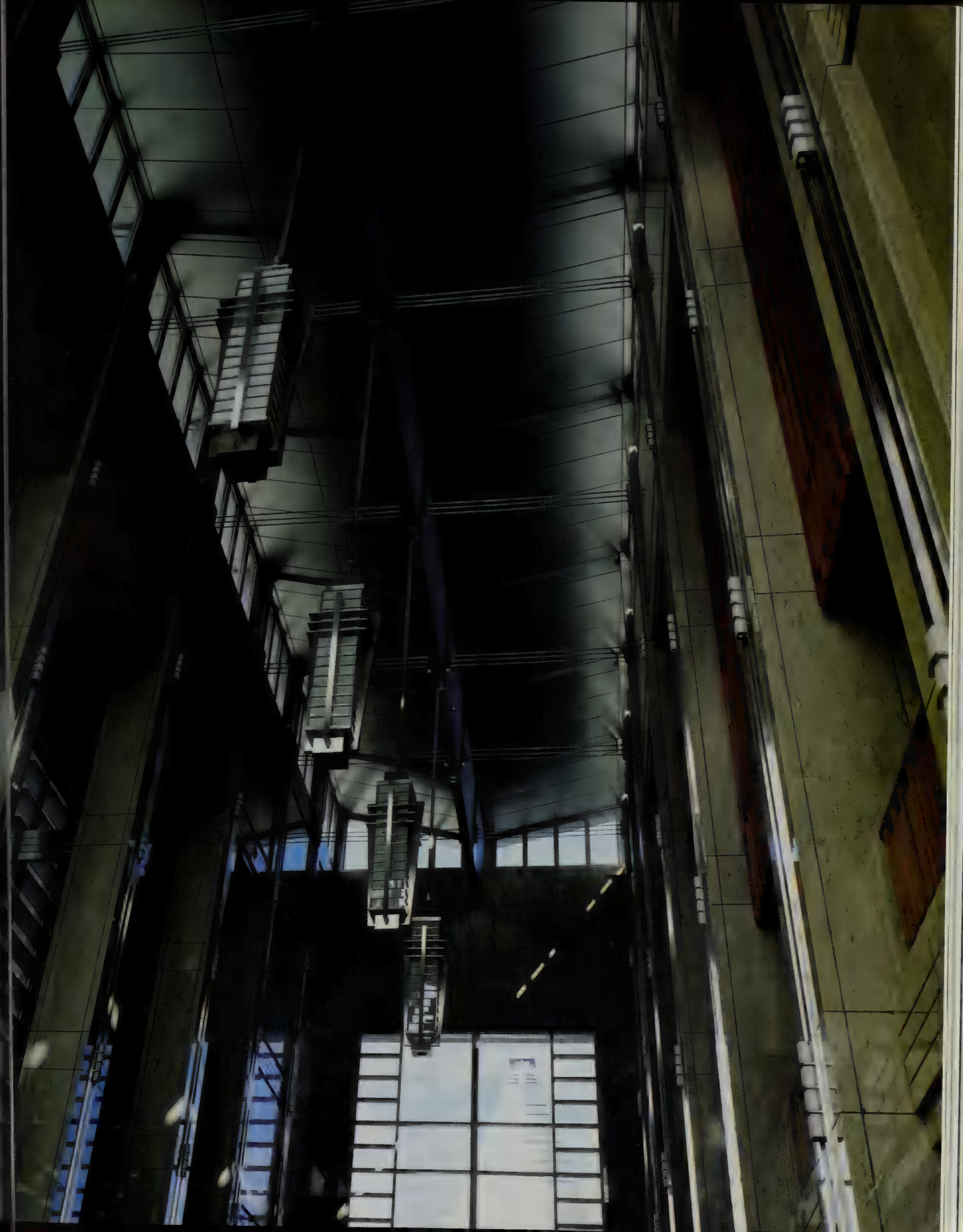


GROUND FLOOR



THIRD FLOOR

1. *Tower lobby*
2. *Retail*
3. *Banking hall*
4. *Branch bank*
5. *Gardens*
6. *Mosque*
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8. *Multifunction*
9. *Health club*
10. *Dining*





The Phoenician Resort, Scottsdale, Arizona



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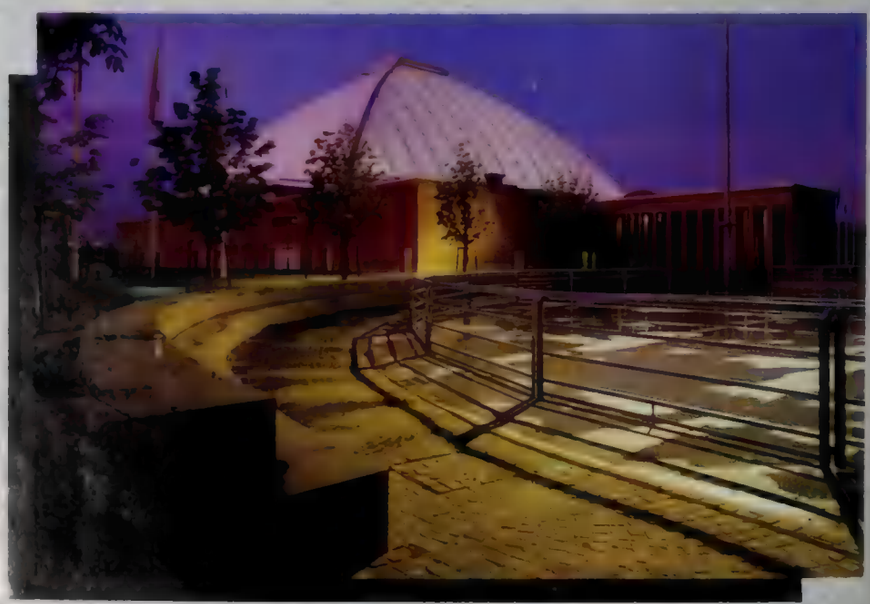
Striving for architectural excellence is no kid's game. It's serious team play. And what contest could be tougher than creating a major sports arena? Birdair knows that keeping the lead in tensioned membrane sports domes and structures means fighting for goals through technical innovation and manufacturing excellence. Extra effort wins. The World Cup Championship, World Series Baseball, The Superbowl, NCAA Final Four Basketball, Pan American and Asian Games have all appeared in world class sports facilities covered by Birdair.

Rome's Olympic Stadium is covered with a 50,000 sq. meter Birdair shade roof dramatically extending 55 meters from an externally supported structure. St. Petersburg, Florida's cable supported Birdair dome is the second of its type in the U.S. and the largest of its design in the world (34,385 sq. meters of membrane are tensioned to form a 210 meter clear span cable dome weighing less than 30 kilograms per sq. meter). Ravenna's Flammini Group project is configured for basketball and tennis. Its 2,920 sq. meter Birdair dome is supported with an exposed steel pipe lattice framework in a four sided cylindrical shape.

These are just a few examples of how the Birdair team can meet the challenge of your next tensioned membrane project with skills that compete with anyone in the field. Contact us for additional information. We will send you a free brochure featuring eighteen of our most recent and exciting installations.







BIRDAIR

Birdair, Inc. • 65 Lawrence Bell Drive
Amherst, New York 14221 USA
716-633-9500 • 800-622-2246
FAX: 716-633-9850

Top: Olympic Stadium, Rome, Italy. Architect: Italproggetti S.r.l. Roof Consultant: Studio Technico Majowiecki. Middle: Florida Suncoast Dome, St. Petersburg, Florida. Architect: Hellmuth, Obata & Kassabaum, Inc. Engineer: Geiger/KKBNA. Bottom: Ravenna Sports Palace, Ravenna, Italy. General Contractor: Flammini Engineering. Roof Consultant: Studio Technico Majowiecki.

Circle 37 on **inquiry card**

HOW WOULD YOU DESIGN A BUILDING IF YOU HAD TO PAY THE POWER BILL?

Does a building with a low power bill have to be a boring, windowless, utilitarian box? Or some funky geothermic "habitat of tomorrow"? In a word, no.

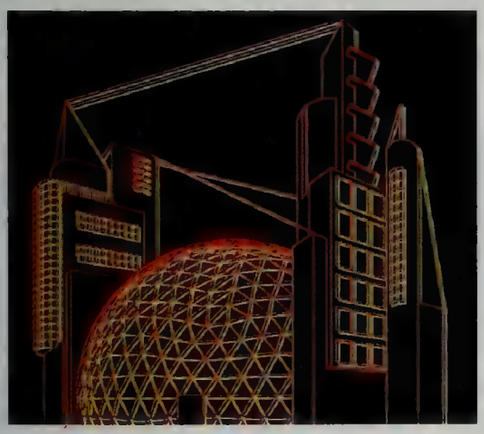
Energy-efficient buildings can look any way you want them to. Because energy-efficient measures have a minimal impact on the design of a building.

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Through customized computer modeling, we can recommend many specific building envelope, lighting, heating and cooling options that significantly lower your operating costs.

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there's Energy Smart Design - a free service from your electric utility to give you detailed, energy-saving advice.



And pretend, for once, that you'll be paying the power bills. Then go ahead and design it to look any way you darn well please.

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Circle 24 on inquiry card

Built-Up vs Metal ROOFING SYSTEMS





When it's time to retrofit, the choice depends on the situation.

Built-up makes sense when your client:

1. Does not like changes.
2. Is a short-term building owner.
3. Intends to replace the building with a new one.
4. Is concerned with short-term cost control.

Metal makes sense when your client:

1. Wants to update the building with a new look.
2. Is a long-term building owner.
3. Wants additional insulation.
4. Is concerned with long-term life-cycle costs.

Metal Retrofit makes more sense today than ever before for clients who want a long-term solution to the problem of leaky roofs. Today's standing-seam metal roofing systems offer colorful, waterproof coverage with minimum maintenance and system life expectancy of well over 20 years.

Life-cycle cost comparisons of available roofing systems indicate that standing seam metal roofs, although more costly to install, are less expensive to own and maintain over the long term than built-up and other alternatives.

In the Central High School East Roof Value Analysis*, anticipated 20-year total roof costs were as follows:

20-YEAR TOTAL ROOF COSTS
Metal: $25.75 per square foot
Built-up: $51.50 per square foot

(Costs based on: Metal @ $5.75 per sq. ft. installed plus $5000 maintenance for the first 10 years and $5000 maintenance for the second ten years; Built-up @ $3.00 per sq. ft. installed plus $367,000 maintenance for the first ten years and $367,000 maintenance for the second ten years.)

Although each retrofit situation is different, metal's long life expectancy, potential energy savings and minimum maintenance requirements certainly make it worth strong consideration. MBCI would be pleased to provide you with more information on the benefits of standing seam metal roofing systems. We would also be pleased to get specific about what MBCI can do for you and your clients.

Call us today. Ask for your free copy of our NuRoof Design/Installation Manual, with its detailed design data for a variety of re-roof situations.

* Prepared by James E. Grimes, A.I.A. (May 7, 1990). Excerpts from Metal Architecture, 1991 issue presented by American Iron & Steel Institute, Washington D.C.

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Dallas 214/988-3300
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Tampa 813/752-3474
Richmond 804/526-3375
Indianapolis 317/398-4400
Omaha 402/451-7000
Memphis 601/429-4009

Circle 47 on inquiry card

Product Literature



400. Engineered curtain walls
A color brochure illustrates projects built with this maker's architectural-aluminum glazing systems, including Richard Meier and Partners' Bridgeport Center, the Guggenheim Museum, and several successful renovations. Frame details are drawn for the CW-100, -400, and -600 curtain walls and atrium-size skylights. Vistawall, Terrell, Tex.



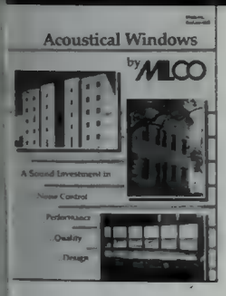
401. Exit device
A catalog page introduces Series 98 and 99 devices for "controlled" exits, such as ones where security or other reasons call for remote closure. These pneumatically operated mechanisms are for use where electrical products are hazardous and not permitted by code. Von Duprin, Inc., Indianapolis, Ind.



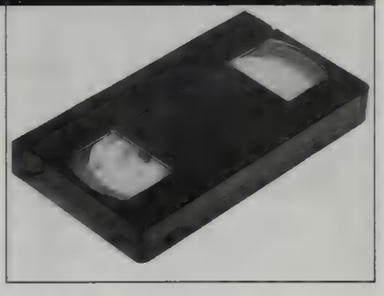
402. Paint-spec software
AccuData is a coating selector, data base, and specifications software program that condenses product information on Pittsburgh Paints and matches each system with the appropriate industry standard. Writes paint and application specs; works with color-match software. No charge. 800/441-9695. PPG Architectural Finishes, Inc., Pittsburgh.*



403. Single-ply "encyclopedia"
A ten-section, three-ring binder offers roof-design professionals the most recent data on all Stevens membranes and accessories, including white Hypalon and black HY-Tuff/EP systems. Includes Sweets' catalog inserts, wind-uplift and other test data, and over 100 detail application drawings. JPS Elastomerics Corp., Northampton, Mass.*



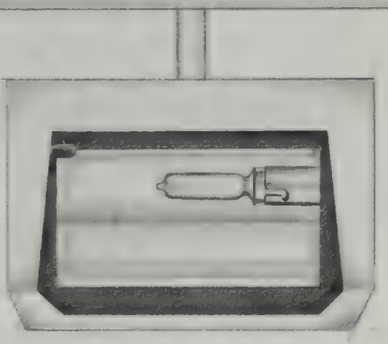
404. Acoustical windows
A color brochure features a line of floor-track windows, both operable and fixed, that have two separate aluminum frames joined by a non-structural thermal barrier. Noise-control performance can be designed into custom windows for particular projects. Specs, details, and performance data offered on disk. Milco, Inc., Wausau, Wis.*
Product Data on CAD disk



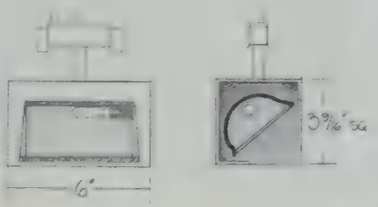
405. Rolling fire-door video
Designed to introduce specifiers, fire officials, and building owners to the advantages of proprietary fire-door products, a free videotape features four Cookson rolling fire-door systems. FAX letterhead requests to 800/858-0653. The Cookson Co., Gastonia, N.C.
Continued on page 97

For more information, circle item numbers on Reader Service Card.

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NCARB's two new study guides can help!

If you're taking NCARB's Architect Registration Examination, be sure to add these two valuable study guides to your study program. This year, NCARB has published two separate books that explain the A.R.E. and help you prepare for it.

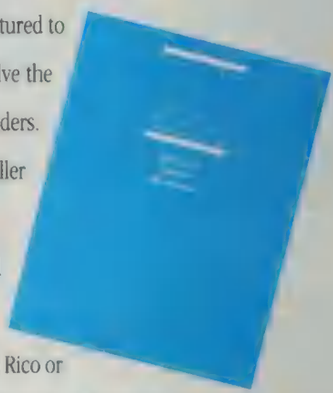


1994 A.R.E. Graphic Handbook $55 plus shipping

Graphic In 1994, the format of Division C: Building Design will change to a multiple vignette format similar to that of Division B: Site Design Graphic. You'll want to get a head start with this book since it contains up-to-the-minute information about the exam. The *1994 A.R.E. Graphic Handbook* contains sample vignettes for Site Design and the new Building Design Format. Vignettes for both divisions have been structured to give you one complete graphic exam for each division. Solve the sample vignettes and then look at actual candidate solutions red-lined by graders.

Written A separate handbook for the written divisions of the exam is now available. In a smaller $8\frac{1}{2}$" X 11" format, this useful reference tool contains sample question types for all written divisions.

Ordering Complete the form below and mail with payment. ▪ Within the continental U.S.: Add $5 shipping and handling. District of Columbia residents must add 6% sales tax to the purchase price. ▪ Other U.S. jurisdictions: Add $10 shipping and handling if your order is shipped to Alaska, Hawaii, Puerto Rico or the Virgin Islands. ▪ Canada: If your check is drawn on a Canadian bank, the prices are: *1994 A.R.E. Graphic Handbook* Canada $68 (plus shipping); *A.R.E. Multiple Choice Handbook* Canada $32 (plus shipping). Add $10 shipping and handling. Canadian residents are responsible for any additional duties or charges.



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Manufacturer Sources

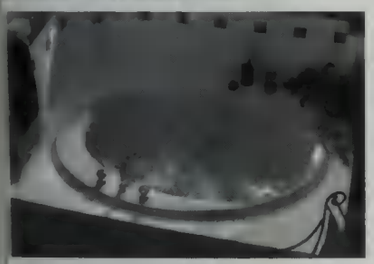
For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 56-61
USAA SERO, Southeast Regional Office
Spillis Candela & Partners, Inc., Architect
Pre-cast concrete panels: Universal Concrete Products Corp. (Florida). Curtain wall: Johnson Architectural Metal Co. Glazing: PPG Industries, Glass Group (Solex, Solar Green). Architectural ladder-formed walls, pre-cast panels (garage): Coreslab Structures, Inc. Built-up roof: Trumbull, Owens-Corning. Single-ply roofing: Sarnafil. Under-deck waterproofing: American Hydrotech, Inc. Entrances: Ellison Bronze. Sliding glass doors: Dor-O-Matic, Inc. Interior wood doors: Algoma Wood Doors, Inc. Locksets: Schlage Lock Co. Exits: Von Duprin. Closers: LCN. Paints: Sherwin Williams Co. Acoustic ceilings: Armstrong World Industries, Inc. Wall fabric: Carnegie (Xorel). Fabrication: Stretchwall, Inc. Recessed lighting: Prescolite. Lobby pendant: Elliptipar. Exterior wall lighting: Kim. Site luminaires: Spaulding Lighting, Inc. Elevators: Montgomery.

Pages 78-81
Minneapolis Pathways
Anmanian Winton Architects
Casement and awning windows: Marvin Windows. EPDM roofing: Firestone Building Products. Locksets: Schlage. Hinges: Stanley. Closers: Yale. Paints: Pratt & Lambert. Stains: Minwax. Cork flooring: Ipocork. Lighting: Artimede; Troy; Rejuvenation Lamp & Fixture Co. Recessed lighting: Lightolier, Inc. Outdoor wire-guard fixtures: Halo.

Corrections
- The Director of the Florida Center for Community Design + Research at the University of South Florida in Tampa was incorrectly identified ["Should Architects Design Cities?, May 1994, page 31]. He is James Moore.
- The architect of the House in the Hamptons that appeared in our June issue [Computer Delineation Awards, page 43] should have been indicated. The firm is Davis + Maltz of New York City.

New Products



313. Compact whirlpool
A one-person tub, the Seaside whirlpool bath measures only 60- by 42- by 21-ins., with four water jets. Its space-saving footprint and acrylic composition are said to make the oval unit available at a "value price". Comes in seven colors and white. Kohler Co., Kohler, Wis.



314. Environmentally correct
Open-backed for easy replacement installation, the Versacooler is made with lead-free copper components; vinyl finish is standard. The unit is said to meet the newest and most stringent ADA, CFC, and no-lead regulations. An optional trim piece covers any uneven cutout edges or marred wall areas. Supplies 7.8 gpm of chilled water. EBCO Manufacturing Co., Columbus, Ohio.

Important Information About Schuller Phenolic Foam Roof Insulation and Possible Steel Deck Corrosion

From January 1989 to February 1992, we produced UltraGard® Premier, a glass mat faced phenolic foam roof insulation, which is no longer manufactured by us.

Recent observations suggest there is a potential for phenolic foam roof insulation to contribute to the corrosion of steel roof decks. In extreme conditions, where insulation is wet or damaged, the corrosion reaction could progress to a point which could weaken or penetrate an area in the metal deck.

Therefore, where evidence of wet or damaged phenolic insulation exists, or severe deck corrosion is observed, care should be taken in operating equipment, moving heavy loads and walking across the roof.

IF YOU HAVE SCHULLER* PHENOLIC FOAM INSULATION ON YOUR ROOF, PLEASE CALL US AT 1-800-345-9602.

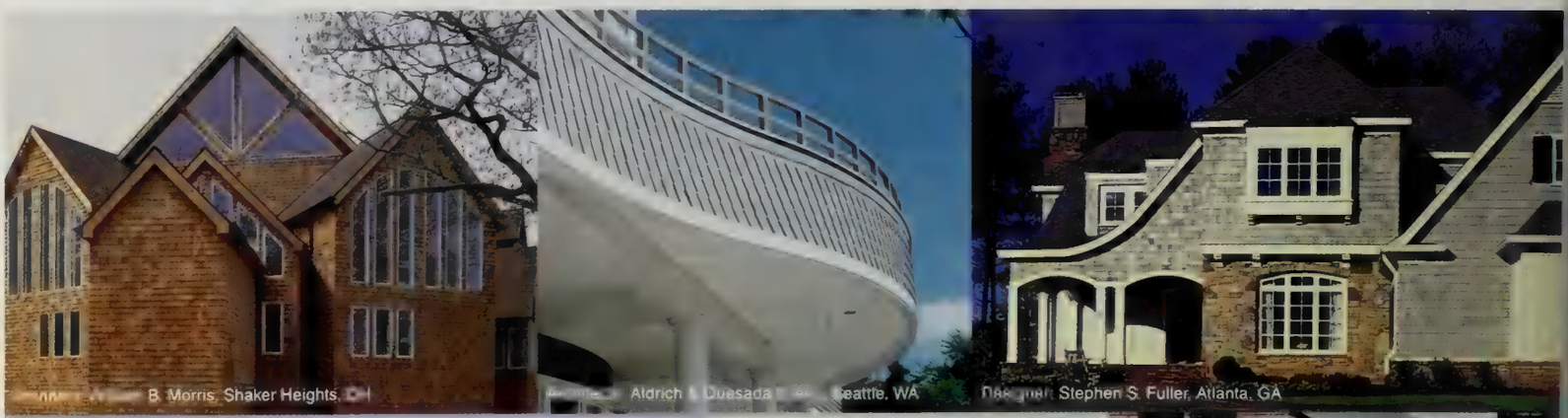
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Schuller International, Inc.
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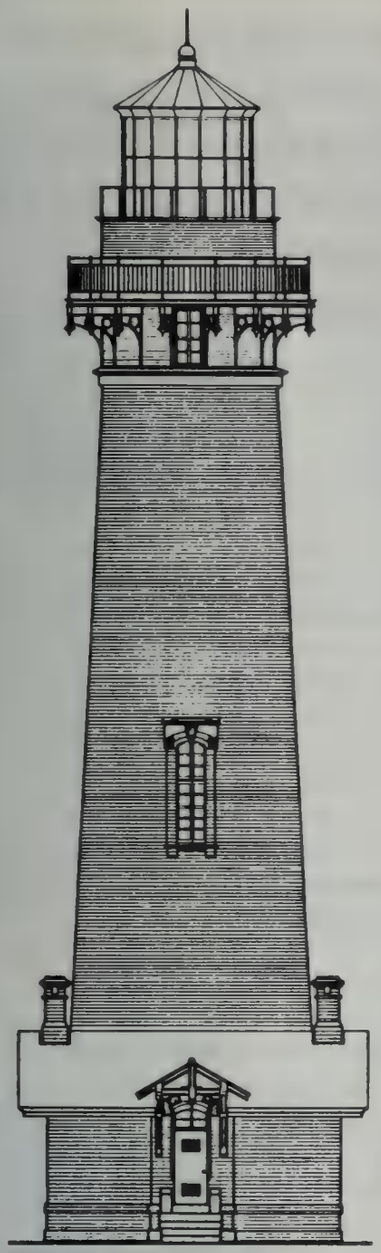
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Make preservation a blueprint for the future.

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Outlook *continued from page 31*
the most favorable outlook for state budgets since the start of the recession in 1990.

Demographic trends still support educational building. With pent-up demand, increased tax revenues may loosen government purses, and higher consumer confidence may improve the approval rate for local bond issues. Following a pause in 1993, prison construction looks to be regaining some of its previous strength. Expect an increase in 1995 and subsequent years from the anti-crime legislation currently under consideration by Congress. Whether it's the $13.5 billion over five years in the House bill or the $3 billion in the Senate version, the demand for prison space will be high, as legislation increasingly mandates prison time for repeat offenders. Post-office construction will also rebound, supported by the $1.1 billion for facilities included in this year's Postal Service budget. Actual spending was only $378 million in the last fiscal year.

The one exception to 1994's upward institutional trend will be healthcare building, which is expected to show a modest retreat due to uncertainty over the shape of the Administration's reform package. Cost-containment pressures have already resulted in shortened patient stays and prompted hospital mergers, reducing inpatient-bed needs. Healthcare's growth segment remains outpatient clinics and nursing homes.

Income properties: modest strength
Last year saw the end of the long decline for the income-property group. Both multifamily housing and commercial building bottomed out in early 1993, and then began to experience modest strengthening in the year's latter half. For 1993 as a whole, income-property construction totaled 668 million sq ft, up 5 percent from the dismal 634 million sq ft reported in 1992. Early data for 1994's first quarter reveals continued improvement, as these types are aided by a strengthened economy with its heightened employment. Another measure of slowly improving markets is the fact that vacancy rates have been edging back in recent quarters. The national office vacancy rate has now eased to 17 percent after hovering around 19 percent for the past three years.

Offices, warehouses, hotels, and multifamily housing are moving up from historically low levels, so modest gains in absolute terms appear highly positive on a percentage basis. There is still little speculative investment occurring. The retail category, by contrast, is
Continued on page 99



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SOME FOLKS NEED A LITTLE LIFT.

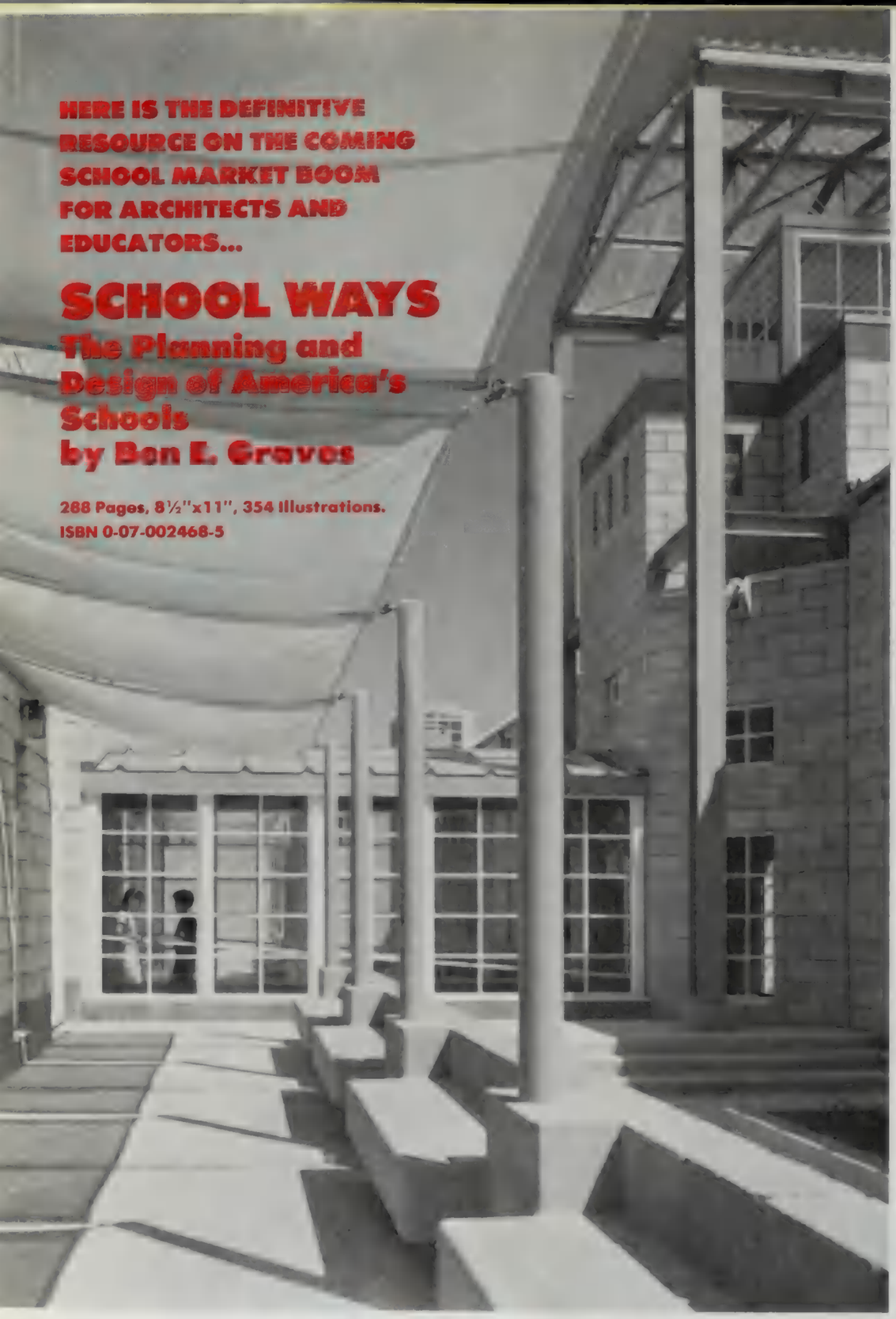
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SCHOOL WAYS

The Planning and Design of America's Schools

by Ben E. Graves

288 Pages, 8½"x11", 354 Illustrations.
ISBN 0-07-002468-5

$35 BILLION WILL BE SPENT OVER THE NEXT THREE YEARS ON K THROUGH 12 SCHOOL CONSTRUCTION*

*F. W. Dodge.

The number of school-age children is booming. From top to bottom, the existir educational plant in most urban areas is in shambles. **And 30 percent more spac is needed per pupil.** There's an explosio in special programs that targets the needs of students with learning disabilities or outstanding talents. Computers are now *b* tools of education . . . and they require lots of extra footage. And most classes will be m up of 20 pupils — instead of 30 or more, requiring additional classrooms. . . . **And That Means More Schools Have To Be Built!**

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Product Literature Showcase

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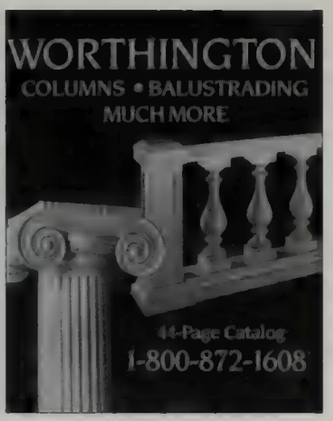


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Circle 58 on Inquiry card

Interior Systems LaCrosse



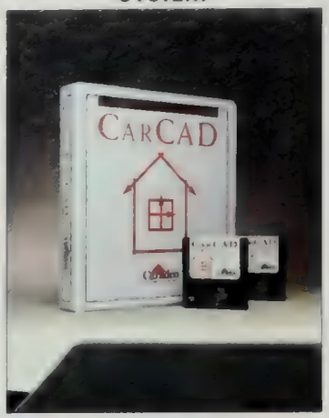
Ark*id* tecture Funscapes is the newest addition to **Interiors Systems' Signature Series**. The Ark*id* tecture collection uses a unique computerized cutting system to produce standard and custom acoustical ceiling tile designs for schools, children's clinics, hospitals, daycare centers, retail stores. Use single or multiple panels with any design, logo, or color. Call 1-800-782-0070.

Interior Systems

Circle 59 on Inquiry card

Product Literature Showcase

CARADCO CarCAD SYSTEM

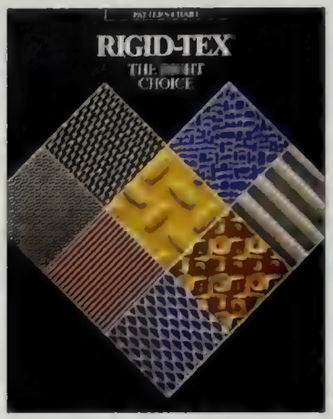


CarCAD, a state-of-the-art computer aided design program from Caradco, helps architects, builders, and designers create with the full line of Caradco wood windows and patio doors. Can generate CSI specifications and .DFX files for use in AutoCAD®. Call (800) 238-1866, ext. 2137.

Caradco

Circle 60 on Inquiry card

Textured Metals



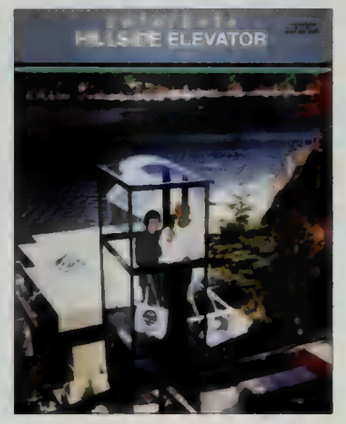
Rigid-Tex® metals combine beauty and durability in any interior or exterior applications. Dozens of patterns to choose from, including custom designs. For elevator doors and interiors, column covers, walls, ceilings, entrances, signage and trim. Available in a wide selection of metals, colors, finishes, gauges and sizes.

Rigidized® Metals Corp., 658 Ohio St., Buffalo, NY, USA 14203-3185, (800) 836-2580

Rigidized Metals Corp.

Circle 61 on Inquiry card

Garaventa Hillside Elevator



Make your client's beautiful hillside terrain accessible with the Garaventa Hillside Elevator. Ideal for both residential and commercial applications, the Hillside Elevator is custom-designed to meet your client's needs for value, size or comfort. Starting at $35,000, the Garaventa Hillside Elevator is a valued addition to your client's lifestyle. For more information, call 800-663-6556 or 604-594-0422.

Garaventa (Canada) Ltd.

Circle 62 on Inquiry card

New Literature



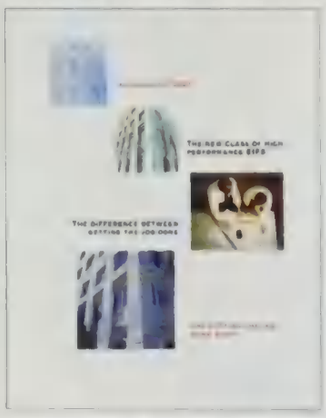
The new dock equipment brochure from BLUE GIANT incorporates architectural specifications with typical application descriptions and detailed feature photographs. Location photos show the many and varied types of loading dock equipment manufactured by BLUE GIANT and installed around the globe.

BLUE GIANT EQUIPMENT CORP.,
One Industrial Park Drive,
Pell City, AL 35125
Phone: 800- USA-BLUE
FAX: 205-884-1504

Blue Giant Equipment

Circle 63 on Inquiry card

High Performance QA21 EIFS Brochure



Senergy Inc. has introduced a new exterior insulation and finish system (EIFS) designed for situations requiring performance that exceeds conventional EIFS standards. This brochure outlines the unique program of materials upgrades, design review, field support, and quality assured applications which ensure the high performance.

Senergy Inc.

Circle 64 on Inquiry card

Acoustic Panels and Baffles



ALPRO acoustical wall panels provide a dramatic and effective solution to noise control problems. **ALPRO** metal acoustical components are durable and economical to fit your budget and **ALPRO** can custom design a system to meet your acoustic and aesthetic needs. The *Sound Solution* since 1945- **ALPRO Acoustics**, 600 St. George Ave., Suite A, New Orleans LA 70121. Phone (504) 733-3836. FAX (504) 733-3851

ALPRO Acoustics

Circle 65 on Inquiry card

Mohawk Commercial Carpet



A collection of coordinating patterns and solids from Mohawk Commercial Carpet and AlliedSignal Fibers. It includes a wide variety of commercial carpets - from solid color cut piles to graphics and wovens. The brochure features photographs of the carpets paired with the Urban Textures which inspired them. MOHAWK COMMERCIAL CARPET 800-618-1234.

Mohawk Commercial Carpet

Circle 66 on Inquiry card

Decorative Wood Ceilings and Walls



NaturaLines™ wood ceilings and walls are available from Conwed in numerous styles and finishes. Wood ceilings and walls feature dynamic lines for such environments as hotels, banks, offices, reception areas and schools. Styles include linear, louver, cellular, and coffer in woods such as oak, hemlock, maple, or desired species. NaturaLines wood ceilings and walls are available in fruitwood, walnut, mahogany and custom stains or choose from finishes such as clear lacquer or Class A.

Conwed

Circle 67 on Inquiry card

Baby Changing Stations



Koala Corp.'s Baby Changing Stations are designed to be compatible with parents, babies & the A.D.A. Steel-on-steel hinges withstand a static load of 350 pounds. Our 10-gauge steel door stop system prevents any sag in the changing platform. Even when the weight of a child is added, the platform doesn't descend past the horizontal plane. Installed, our new horizontal design unit extends no more than 4" from the wall when closed, to conform to A.D.A. regulations 4.4.1, for 4" maximum protruding object when & where applicable. When only a forward approach is allowed, the horizontal unit can be installed in accordance with A.D.A. regulation 4.2.5 for forward reach. If space allows a parallel approach, both units can be installed to meet 4.2.6 for side reach. Built to last, each Station is backed by a five-year warranty on all parts & labor. Call 1-800-666-0363.

Koala Corp.

Circle 68 on Inquiry card

Revere Copper Shingles



Revere Copper Shingles are quicker and easier to install than ordinary asphalt shingles. There are no special skills required & no special tools. Because Revere shingles are manufactured from solid copper, not a foil laminate, they will likely last as long as the building they protect. To learn more about our copper shingles, or any of our other copper roofing products, call us toll-free at 800-490-1776.

Revere Copper Products

Circle 69 on Inquiry card

Carved Marble Fireplace



$699 per set. Direct importer of marble, granite, limestone and slate. Marble starts at $3/sq.ft., granite $5/sq.ft., and slate at $1.50/ sq. ft.. For a free brochure or more information call (510) 782-2888 or write to Jerong Products, 23785 Cabot Blvd., #313, Hayward, CA 94545.

Jerong Products, Inc.

Circle 70 on Inquiry card

Concrete Waterproofing by Crystallization



Applied as a slurry coating, Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that 'plugs' the pores of the structure preventing water seepage. Xypex is ideal for use on the 'inside' of wet underground structures.

Xypex Chemical Co.

Circle 71 on Inquiry card

Windows and Doors



Since 1921, Zeluck has served the architectural community with windows and doors unmatched for flexibility. Defining "custom" as variation in width and height is not our concept of custom; our ability to make your fantasy a reality **is**. Zeluck offers a wide selection of timber from ***responsibly managed forests.*** Call (800) 233-0101 or (718) 251-8060. ZELUCK, with offices Nationwide.

Zeluck

Circle 72 on Inquiry card

Anchor Diamond® Pinless Retaining Wall System



Anchor Wall Systems new full-color catalogue offers complete product specification information, installation guidelines and reinforcement usage for its pinless and mortarless segmental retaining wall system that is flexible in design, easily installed, long lasting and a cost-effective choice for any commercial or residential retaining wall need. Call (800) 473-4452 for a free catalogue and manufacturer's name.

Anchor Wall Systems

Circle 73 on Inquiry card

P.S. #59 Case History



Fire resistant REYNOBOND® Aluminum Composite Material is featured in a case history of the recladding of P.S. #59, the High School of Art and Design in New York City. Containing details and comments by the design and contracting principles, the report is available with a complete REYNOBOND® Architectural Brochure. Contact Reynolds Co.; Construction Prods. Div..; P.O. Box 27003; Richmond, VA 23261 Call: (804) 281-3629; Fax: (804) 281-3602.

Reynolds Metals Co.

Circle 74 on Inquiry card

Fire Retardants and Preservatives



Hoover Treated Wood Products' new 12-page Sweet's catalog features Pyro-Guard third generation interior fire retardant lumber and plywood for roof sheathing and other structural uses; Exterior Fire-X FRT lumber and plywood for decks, balconies, siding and other outside uses; and CCA preservative treated lumber and plywood that's kiln dried after treatment.

Hoover Treated Wood

Circle 75 on Inquiry card

Product Literature Showcase

New "Londia Fantasy" Flooring Combines Color, High Tech Design

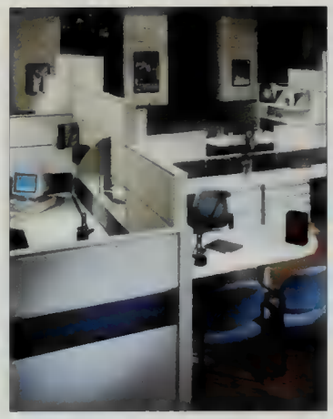


"Londia Fantasy" is a new, Sheet-vinyl flooring with a unique high-tech look. Slip-resistant, it features an embossed pattern of classic "playing card" diamonds. The raised diamond's surface reflects light, creating a sparkling contrast to the overall pattern. Easy to install and maintain -- in eight standard colors from LONSEAL, Inc.

LONSEAL, Inc.

Circle 76 on Inquiry card

REASONS Stacking System for Improved Office Spaces

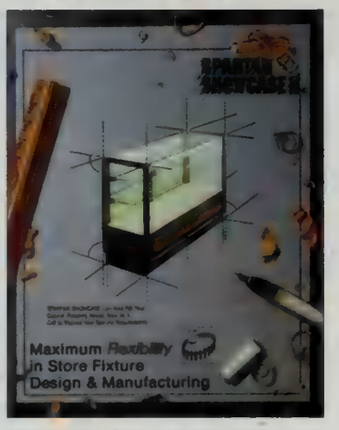


REASONS from Transwall Corp., a manufacturer of movable office partitions & systems furniture, is a new stacking system designed to provide improved office space facilities with maximum flexibility & a minimum of parts inventory. It offers quick off-module changes for work surfaces & overhead storage, which can easily be rearranged on horizontal rails without structural panel changes. Total wire management is provided in the 4" thick panels, as well as an unlimited choice of aesthetic color selections.

Transwall Corp.

Circle 77 on Inquiry card

Maximum Flexibility in Store Fixture Design & Mfg.



Spartan Showcase, Inc. is a manufacturer of quality crafted display equipment for the food and non food retail industry.
Our flexibility in design and manufacturing offers you standard and customized display fixtures to meet your specific requirements.
For more information and a free catalog call:
Spartan Showcase
Marketing Dept.
(800) 325-0775
Fax 314-583-4067.

Spartan Showcase, Inc.

Circle 78 on Inquiry card

Stone Panels



Ultra-Lite natural granites, marbles, limestones & slates. Offering natural stones with 80% less weight. Reinforced for high impact & flexural strength. Especially well suited for renovation & reclad. Saves on back-up framing & structure requirements. Reduce installing labor costs. Used on building exteriors throughout the world. Also elevator cab & lobby cladding, ceilings & locations requiring real stone but less weight.

Stone Panels, Inc.

Circle 79 on Inquiry card

New Craftsmen™ Benches

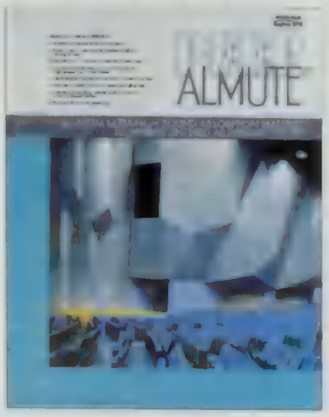


TimberForm® presents a catalog of their new Craftsmen series of benches, seats & litter containers. Photos, technical data & product dimensions are shown. Inspired by the design qualities of the American Craftsman style & created for demanding street, park & mall locations, this site family uses heavy-duty cast bench frames with matching cast litter containers. Choose from Alaska yellow cedar, Marine Teak or Purpleheart bench slats. Graphics & lettering can be added to the castings. Over 170 designer colors are offered. Call toll-free 1-[illegible] (Ext 525).

Columbia Cascade

Circle [illegible] on Inquiry card

Peer, Almute® Aluminum Panels



Almute® sintered aluminum sound-absorbing panels can be affixed to walls or ceilings. Almute all-metal panels present a strikingly beautiful, high-tech look combined with a sound absorption efficiency close to 90%. Almute panels may also be macro-textured to include ridges, corrugations, or custom designs. Almute is air permeable, non-fibrous, and completely resistant to harsh environments. Contact us at 1-800-433-7337.

Peer Almute®

Circle 81 on Inquiry card

Newest Thermostat Models



More than just a heater - it's an investment in comfort that pays dividends in $$$'s! 99.9% efficient, fully automatic thermostat, easy to use automatic pushbutton ignition. Vent-free, patented ceramic burner plate technology delivers radiant and convection heat simultaneously. Get more than you bargained for $ for $ you can't beat a Rinnai. For information telephone: 1/800/621-9419.

Rinnai America Corp.

Circle 82 on Inquiry card

VIXEN HILL MFG.



Tired of imitation shutters made from a mold? Unhappy with shutters held together by staples? Give yourself a surprise: traditional working shutters made of clear, old-growth western redcedar. Constructed with authentic teak-pegged mortise & tenon joints, Vixen Hill manufactures classic panel & louver styles in standard & custom sizes. Cedar shutters feature heavy stiles & cross-rails as well as separate interlocking trim & extra thick louvers for extended product life. For brochure call 1-800-423-276[illegible]

Vixen Hill Manufacturing

Circle 83 on Inquiry card

To Advertise: Call 1-800-544-7929
Fax: 212-512-2074

Nature Guard® Recycled Newspaper Insulation



Nature Guard insulation costs less than fiberglass and has a 3.8 R-value per inch - higher than any blown-in fiberglass or rockwool on the market. Its fluffy, natural fibers completely seal the wall cavity, resulting in lower air infiltration and greater sound absorption. Made from 100% recycled newspaper, it helps keep our environment cleaner.

Louisiana-Pacific

Circle 84 on Inquiry card

Barrier-Free Entrances with Swing Door Operator



Our *EasyAccess*™ swing door operator makes complying with the ADA 1990 mandate "readily achievable". ADA defines this as "easily accomplishable ... without much difficulty or expense". The *EasyAccess* operator, installed without structural modifications, creates an affordably priced, barrier-free entrance for the physically disabled. Automatic operation with a push of a button.

Horton Automatics

Circle 55 on Inquiry card

Graphic Display

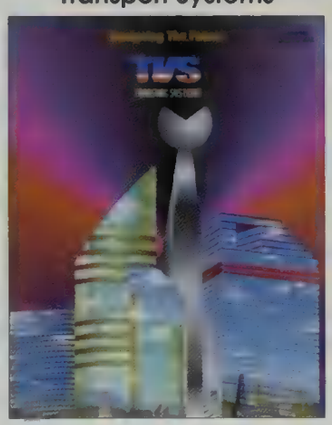


Optimize your visual impact - with award-winning products from Clearr Corporation, the industry leader in the field of high-impact graphic display. Our new eight-page catalog features more than fifty color photos showing the latest developments in the areas of backlit, edgelit, and nonlit graphic display. All have the sole purpose of optimizing the visual impact of your display decor, in any display environment. Call 800/548-3269, Fax 612/931-2259

Clearr Corporation

Circle 86 on Inquiry card

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- Custom design each system to building specifications

Transvac System, Inc.

Circle 87 on Inquiry card

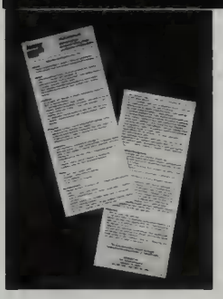
Product Literature



406. Tile roofs in less time
According to preliminary test results, a new fastening system for slate roofing requires a record-low installation time. A roofing square of 24- by 12-inch slate (114 pieces) is said to take 34 minutes to put in place. Specifications and further information are available in a four-page color brochure. Slate International, Inc., Upper Marlboro, Md.



407. Plastic glazing
A guide to General Electric's complete line of Lexan architectural sheet is available in a 28-inch by 12-inch foldable kit. The package is intended to explain the line's characteristics and the colors available. Included are 3- by 5-in. samples of each plastic-glazing option. Cadillac Plastic and Chemical Company, Troy, Mich.



408. EIFS field checklist
This laminated pocket resource provides a checklist of application guidelines for those who install exterior insulation and finish systems. The guide covers storage and mixing, as well as correct inspection procedures for substrates and application of insulation board, base coat, reinforcing mesh, and finish coat. Senergy, Inc., Cranston, R.I.*



409. Furnishings poster
Collections from Spanish designer Gabriel Teixido and American designer Nancy Robbins are included on a poster that displays more than 50 imported tables and chairs. For contract, hospitality, and residential use, the furniture is deemed appropriate for museums, libraries, universities, and government offices. Design Link International, Boston.



410. Treated-wood guide
This 20-page, black and white booklet highlights the ways in which treated wood is beneficial to the environment. It covers the advantages of lumber over alternative building products, the positive role CCA-treated wood plays in extending forest resources, and the degree to which it protects wood and increases appreciation for nature. Hickson Corporation, Atlanta.



411. Solarium specifics
With 29 pages in color, this booklet illustrates a variety of sunspaces, solariums, and skylights. It also provides specifications for architects, including model drawings, installation details, product lines, performance charts, and technical data. Sunshine Rooms, Inc., Wichita, Kan. ■

* *Product Data on CAD disk*

For more information, circle item numbers on Reader Service Card.

Classified Advertising

To Advertise Call Cherie Jolley 801-974-2843 or Fax 801-972-9409

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ARCHITECTURAL DESIGNER

Nationally recognized, award-winning design firm seeks highly motivated designer with minimum of 5 years experience. Architectural degree required, registration preferred. Cover letter and resume to:

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Architects
430 Oak Grove #300, Minneapolis MN 55403
EOE

Architect: Established midwest firm seeking registered Architect interested in company Ownership. Full service firm specializing in design and build. Established in 1976. Doing business throughout the midwest. Principal would remain during transition. Architectural and support staff of six with gross billings of $500,000-$800,000. Reply to BO-7456, AR.

Criminal Justice Architect – Seeking individual for key Project Architect position with a minimum of three (3) years experience in design of criminal justice projects for potential principle position in progressive, expanding criminal justice architectural design firm located in the Southeast. Requirements include project management experience, strong design skills, marketing ability, self motivated, enthusiastic and keen appreciation of the challenges of criminal justice projects. Send detailed resume outlining experience, goals and salary requirements. Salary commensurate with ability and experience; full benefits and an equal opportunity employer. Send to Grier-Fripp Architects, 8001 Arrowridge Boulevard, Charlotte, NC 28273. (Please, no calls.)

Project Manager – Plan, direct, and coordinate activities of designated project for completion of engineering project within area of assigned responsibility. Prepare detail drafting for a particular job site. Make drawing on the job site. Confer w/workers to outline work plan and assign duties/responsibilities. Provide technical advice and solve technical problems on the job site. 40 hrs/week plus varied OT, 7:30am-3:00pm. $29,400/year. Requ. B.S. in Civil Egn. or Architecture and 2-yr exp. in job offered. Design historical details on the exterior/interior of the building. Speak Polish. Must have proof of legal authority to work permanently in the U.S. Send resumes to: Illinois Department of Employment Security. 401 S. State St. - 3 South. Chicago, IL 60605. Attn: Len Boksa. No calls. An employer paid ad-Send 2 copies of resume.

Broward County, Florida. Board of Rules and Appeals Administrative Director. Salary range $45,920 - $77,582 per year, DOQ. The Board of Rules and Appeals is charged with providing a county wide uniform Building Code and enforcement of it through the building permitting departments of the County and local municipalities, and is also responsible for County wide inspector competency review and certification. The Administrative Director reports to and interacts with the 21 member board, and manages a technical and clerical staff of about ten (10) to provide administrative support. Position requires graduation from an accredited four year college or university with a Bachelors Degree and a minimum of seven years management/ administrative experience. Masters Degree and prior construction industry/ governmental experience preferred. Applicants must submit a resume indicating application for this specific position, to the Broward County Personnel Division, Room 508, 115 S. Andrews Ave., Ft. Lauderdale, FL 33301, to arrive no later than 4:00 p.m. on August 5, 1994. All resumes are subject to public disclosure under provisions of Florida's public records act. Broward County is an equal opportunity employer and provider of services (minority/ female/disabled/veteran).

Intern Architect. Plan and design building projects for clients utilizing integrated system of networked Macintosh computers; use Dreams, Claris, CAD, Modelshop, and MacroMind Director for the creating of virtual reality experience to enable clients to visualize through computer graphics and animated walk throughs, the concept options and designs; use computers to simulate office space set up in three-dimensional presentations; manage building projects; prepare final construction drawings and documentation for obtaining permits; create databases for facility managers using CAFM tools; design, program, and provide documentation for computer based tools for facility management using Autocad and Filemaker software. Minimum requirements: Bachelor's Degree in Architecture. Must have completed course work in the following: a) 3D Modeling and Rendering b) Principles of City Planning c) Computer Graphics in Engineering. Must have completed a one semester project in computer programming and computer animation. Must have six months experience in facility management. Must have one year experience in the position offered or one year experience as an Architect. 40 hours per week, 9:00 a.m. to 5:00 p.m., $27,500 per year. Must have proof of legal authority to work permanently in the U.S. Resume required. Send two copies of resume to the Illinois Department of Employment Security, 401 S. State Street, 3 South, Chicago, IL 60605, Attn: Dennis Jones, Reference #V-IL-11515-0. No calls. An Employer Paid Ad.

POSITIONS WANTED

Overseas – Reg Arch w/20 yrs. mxd exp incl GFRC sks Fr East, S. Amer, E. Eur assnmt. CAD exper. Reply to: Architect, RR, Courtland, Manchester, NH 03103

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The College has four departments: Architecture, Building Construction, Landscape Architecture, and Urban Design and Planning. There are over 65 faculty members and over 600 students in undergraduate, graduate, and certificate programs.

Applicants must demonstrate outstanding academic and/or professional achievement as well as very high aptitude for leadership and management. Women and minority persons are strongly encouraged to apply.

Position available January 1, 1995.

Send nominations, resumes or inquires to:

Professor Wilton Fowler,
Search Committee Chair
301Administration Building, AH-30
University of Washington
Seattle, WA 98195

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Architecture Books. Old, rare, out-of-print. Send $3.50 for catalogs. We also do book searches. $3.00 per title. Beattie Book Co., P.O. Box 739, Cape May, NJ 08204. (609)-886-5432.

USED EQUIPMENT



OFFICIAL PROPOSALS

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
REQUESTS FOR PROPOSALS
DESIGN/BUILD SERVICES –
THE WORLD TRADE CENTER

The Port Authority of NY & NJ is seeking proposals from design/build firms to provide full service architectural design and construction services for tenant related projects at The World Trade Center. This will be a one year pilot program with projects ranging from 600 square feet to 40,000 square feet.

Interested firms with related experience providing full service contracts and adequate staffing for quick turn around are invited to participate. **To request a copy of the Request for Proposal, write to Mr. Robert Benacchio, Manager, Project Management Division, World Trade Center, Tenant Services, One World Trade Center, 35N, New York, New York 10048 or Fax (212) 432-6587.**

Proposal will be due Aug. 19, 1994. No phone calls, please.

THE MARKETPLACE

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Columbia Cascade

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HANDY-SHIELD Safety Covers for drain and supply lines prevent burns and abrasions from contact with pipes under wash basins. This protection is required where Federal and State Accessibility standards are followed.

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F.W. Dodge
McGraw-Hill Construction
Information Group

Circle 96 on inquiry card

Outlook *continued from page 91*

functioning at what can be considered a healthy level by historic standards. It began its turnaround back in 1992, drawing some support from the housing recovery, and has continued to benefit from the transition towards large discount outlets and specialty stores. Renovations and alterations are maintaining their enhanced share of the market—a trend since the 1980s.

For 1994, the income-property group is projected to advance at about a 10-percent clip, lifted by the momentum of a more robust economy. The higher interest rates witnessed this spring, and modest further increases during the remainder of 1994, shouldn't stall an essentially upward trend.

Public works: strong a little longer

Transportation construction should continue to benefit in the near term from funding levels authorized by 1991's highway legislation (ISTEA). The first year the law was in effect, 1992, proved to be a disappointment due to deficit-reduction pressures. But 1993 showed strong growth for highways (up 12 percent) and bridges (up 13 percent) for several reasons: deferred projects from 1992 made it to the construction site, Congress appropriated an amount closer to what ISTEA authorized, and state governments were able to pick up the funding slack through higher gasoline taxes. The current year should benefit from fiscal 1994 appropriations, which at $19.9 billion were closer to the $20.5 billion authorized level than in the previous year. This amount, in combination with the enhanced role taken on by the states, should lead to at least one more year in which transportation public works increases at about a 10-percent pace. After that, the amount of federal spending on highways under ISTEA will level off. It's important to note that the current year has already witnessed a shift of attention back to the environmental side of public works, as Congress considers a revised Clean Water Act, a new Safe Drinking Water Act, and the reauthorization of the "Superfund" law to continue cleanup of toxic waste sites.

The shape of late 1994

The construction gain for all of 1994 looks the same as it did in the last Outlook [RECORD, November 1993, page 48]: 9 percent. The economy's overall growth should maintain construction's upward momentum, even with higher borrowing costs. Single-family housing is expected to become more vulnerable later this year, but not enough to threaten growth in this third year of expansion. ■

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(E) Engineering & Retrofit
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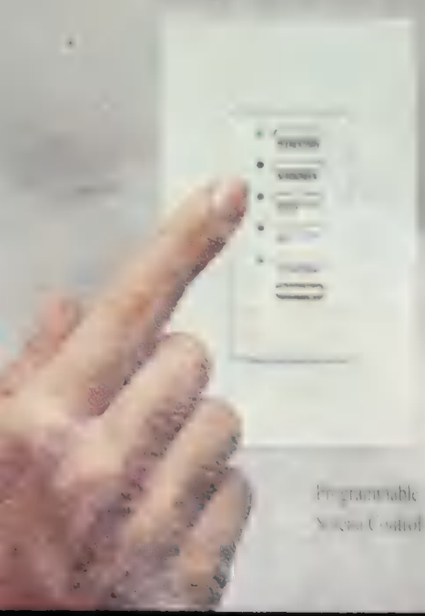
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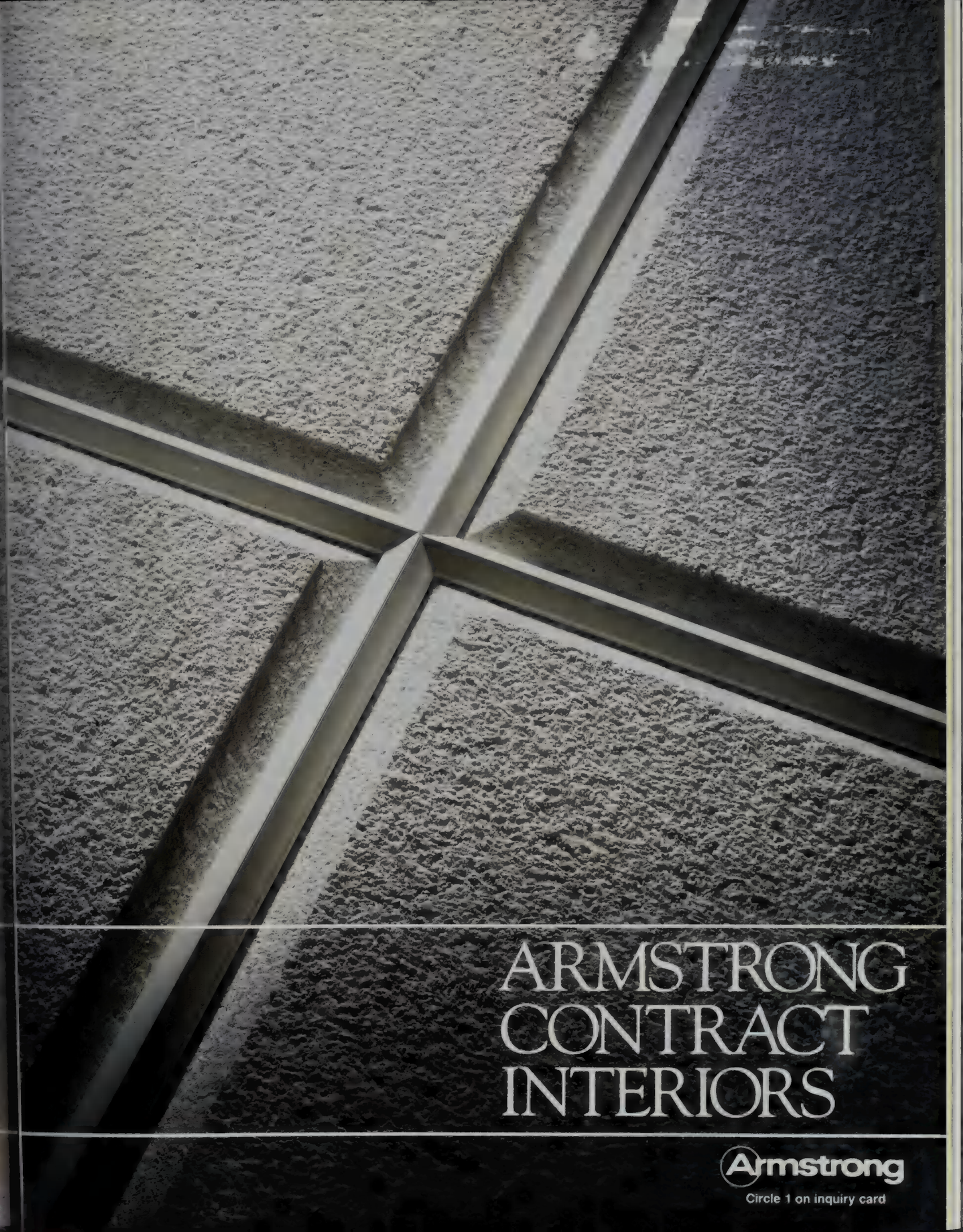


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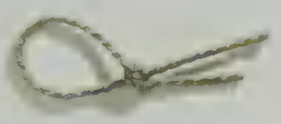
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Architect Bashing Continued

I recently read your editorial, "Architect Bashing: Enough Already" [RECORD, June 1994, page 7] with great interest, particularly since many of my colleagues and myself have been discussing these very issues in the past few months. However, I was disconcerted to find yet another, albeit less palpable, form of architect bashing buried within your article entitled "Cool Chiller." It is a fascinating project with an outstanding innovative solution to a problem that many large campuses are attempting to grapple with. What disturbed me was the process used to select the design team. If I am to understand the article correctly, five teams were requested to submit full schematic designs for a project worth $138 million. Hypothetically, the five percent fee for a project of this magnitude totals approximately $7 million, and the schematic phase at 15 percent of the total fee roughly amounts to $1 million. In essence, each of the five teams was to provide $1 million worth of design services for a stipend of presumably $100,000 to $150,000—a monumental discount in any business!

How much money did the four firms that lost the competition forfeit? Did the prevailing design team recoup their initial expenditures? Why is an outstanding academic institution such as UCLA in the business of bankrupting architects in an economic environment when few architects can make [illegible] let alone sacrifice [illegible] sands of [illegible] service? [illegible] an [illegible]

Reader Adamson is right to protest. The situation was in fact even more grievous than his assumptions indicate. The presumably well-heeled design/build teams were asked to submit schematics without compensation: client UCLA issued the RFP on an "at your expense" basis. The procurement process embodied some features of a design competition in that requirements were very open, giving bidders considerable leeway as to type of plant and equipment. Ed.

Pruitt-Igoe, Act II

Re your editorial about Newark's Columbus Homes [RECORD, May 1994, page 9]: a photograph in the *New York Times* showing the rubble of this demolition said that "building to right is scheduled for demolition." This is one of two towers called Colonnade Towers. These buildings (which my mother lived in for years) were designed, if only partially, by Mies van der Rohe.

The apartments were well laid out and generous with space. The only drawbacks: the corridors weren't carpeted, and there were no operable sashes. Louvers under the windows provided only partially adequate ventilation.

If these buildings are to be torn down, is it mostly due to location?
Michael Deskey
New York City

Rudolph Praised

I was fortunate to read Roger Kimball's splendid Observations column [RECORD, February 1994, page 16] on the same day on which I visited The Museum of Modern Art's Frank Lloyd Wright retrospective.

I first came to know Wright's

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August 26-28

The national Women in Architecture Committee, the Minority Resources Committee, and the Expert Panel on Diversity of the AIA are sponsoring a conference August 26-28 in Washington, D.C. Call 202/626-7453.

September 9-17

Architecture Interiors is the theme of Architecture Week 1994, featuring exhibitions, lectures, panels, tours, awards, an architectural film festival, and keynote speaker A. J. Diamond. Contact Andrea Vecsei at 613/775-4635.

September 22-24

"Houses and Housing: an Exploration of Man's Need for Shelter," is the theme of Rendezvous 94, the 1994 AIA Western Mountain Regional Conference. Call 307/745-5322 for registration information.

September 24-25

The American Institute of Graphic Arts will hold its first biennial business conference in New York City. Registration will be limited to 300 attendees. Call 212/807-1990.

September 27-29

Interplan Show will be held in New York City at the Jacob Javits Convention Center. The show is co-sponsored by Designer's Saturday Inc. Call Jennifer Gam at 212/626-2331.

October 26-30

The National Preservation Conference will be held in Boston by the National Trust for Historic Preservation. Write to: 1785 Massachusetts Ave., N.W., Washington, D.C., 20036.

Competitions

▪ The Boston Society of Architects is sponsoring a contest for unbuilt designs. Entries are due November 8. Winners may receive certificates, cash or other awards. Call Richard Fitzgerald at 617/951-1433, Ext. 232.

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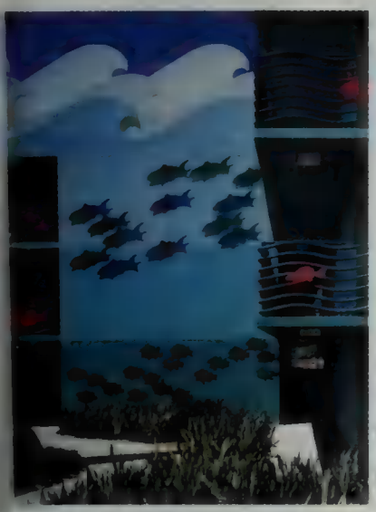
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Surf's up at the Arquitectonica-designed All-Star Resorts.

Next month

RECORD's annual Interiors issue features Hans Hollein's design for a Madrid bank interior; the Andy Warhol Museum galleries in Pittsburgh, by Richard Gluckman; a Santa Monica women's clothing shop designed by Lorcan O'Herlihy and Richard Warner; Smith-Miller+Hawkinson's exhibition space design for the Corning Company; and a Mexico tobacco warehouse converted to a photography gallery by Isaac Broid.

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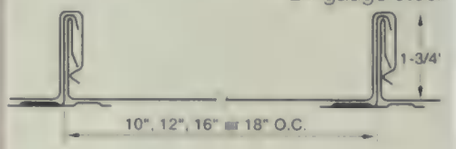
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Elitism Has No Place in Licensing

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No one can say that NCARB's head isn't in the right place. The National Council of Architectural Registration Boards regulating the practice of architecture in the 50 states and in U.S. territories is in the midst of an ambitious plan to keep up with the times. Responding to pressures in many states for practicing architects to undergo some form of continuing personal renewal in order to keep one's license—Alabama and Iowa require it; several other states have enabling legislation under which they could require it at any time—NCARB has under way an impressive agenda. Its Architect Development and Verification Program (known mercifully as ADVP) puts out monographs, the first entitled *Energy-Conscious Architecture*, which come with a series of self-testing quizzes. Number two, due out this fall, deals with a correct interior environment and how to achieve it.

As for testing methodology, automation comes on the scene in February 1997 with a fully computer-administered exam. Computerization will also eventually allow candidates to take the exam at any time and in any place. Meanwhile, the familiar single-building design exam is being broken down into a series of "vignettes" intended to test the broader range of design topics and tasks the practicing architect typically encounters.

With overseas markets beckoning, NCARB is negotiating reciprocity agreements with several key countries, and this year revised a three-year old guide to overseas practice standards in 37 countries.

But there's one problem. In its unrelenting quest for reciprocity, NCARB has lost sight of our changing society. For reciprocity breeds uniformity; indeed you cannot have one without the other. Hence a distressing rigidity and elitism are creeping into the Council's mindset: it virtually dictates the road to licensing, starting with a degree from an accredited school of architecture, followed by a tightly conceived program of diversified experience with a narrowly defined type of employer.

But America is changing. The population, which in 1990 was 76 percent white, will in another two generations consist about 47 percent of other groups, according to expert Ben J. Wattenberg, spurred in part by an immigration rate not seen since 1910. This is very significant here because the new groups will in large part be unable to afford the costly education and the underpaid spell as interns. Combine this with emerging changes in the profession itself—automated practice, diversified services often involving no building, a growing pattern of employment on owners' staffs—and it cries out for a system that *examines performance but leaves the route to the individual candidate*. True, licensing boards cannot turn their backs on the health, safety, and welfare standards which they are chosen to administer. But where are the days when someone of modest means could still sit for the exam after starting as a draftsperson and through sheer grit qualify for and pass the licensing exam? What would have happened to our culture had the Wrens and Brunelleschis and Michelangelos, the Wrights and Buckminster Fullers, been barred from practice for lack of formal credentials?

So in the years ahead, licensing boards everywhere should worry about standards and the quality of testing, but leave it up to the candidates to prepare themselves as best they can. The public has a right to expect safety; it also expects equal opportunity for all. *Stephen A. Kliment*


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India

Design Professionals Rally to Preserve Chandigarh

More than 80 design professionals worldwide have petitioned Prime Minister P. V. Narasimha Rao to ask UNESCO designate Chandigarh a "World Heritage City." Such action could help curb building neglect, shanty-town construction, and an alleged rush by developers for commercial building rights to park areas. The population has increased about eightfold since the 1950s. To join the petition, contact Peter Blake, 140 Elm St., Branford, CT 06405. At right is Le Corbusier's secretariat building; at far right, the legislative assembly. *Angelica Semler*





Israel

Tel Aviv Conference Calls for Return to Bauhaus Values

Some 1,300 people recently attended a six-day conference on the roots of the International Style and its regional traits. Sponsored by UNESCO, the Municipality of Tel Aviv-Yafo and the Tel Aviv Foundation, the event featured 90 speakers from around the world, including Morocco, Turkey, Cuba, and Mexico. During the 1930s, 19 Palestin-ian-Jewish and European-refugee Bauhaus students, along with architects who had studied with Le Corbusier, Erich Mendel-sohn and other Modern masters, turned Tel Aviv into a city built almost completely in the International Style. Among the roughly 4,000 such buildings are typical low-rise housing by Joseph Berlin (1,4), Lucien Korn-feld (2) and Ben Ami Shulman (3). "People cared more about what happened outside than inside," said preservationist Nitza Metzuk, explaining why Tel Aviv's socialist pioneers liked street-facing balconies. "The regional culture changes from one of war to one of peace, architect Dan Darin, Tel Aviv's deputy mayor, claimed it is possible to reestablish the Bauhaus philosophy and create a new society based on equality, justice, freedom and democracy. "The International Style was built at a time of great idealism, with a strong sense of community," Moshe Safdie stated, "[We're] now at a special moment. . .we should go forward with a sense of enormous responsibility to idealism and buildings rooted in the region." Israeli architect Eldar Sharon, son of Bauhaus architect Arieh Sharon, also proposed "Bauhaus principles, not American methods." Pritzker Prize winner Christian de Portzamparc concurred: "We must deal with the specificity of places. . .and give poetic meaning to heterogeneity in cities." *Maria Stieglitz*



1 © Maria Stieglitz



2



3



4

The Netherlands

High- and Low-Technologies Create Green Community





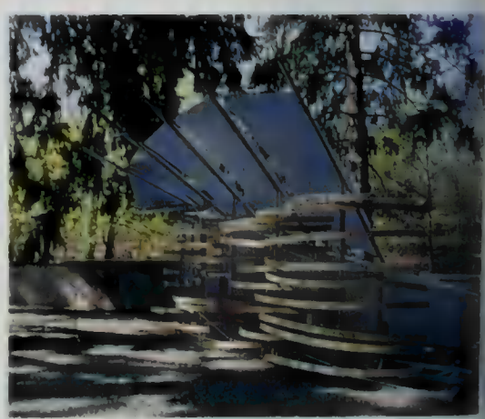
Ecolonia, the aptly-named community of 101 private homes in a variety of designs near the town of Alphen aan de Rijn, is Holland's largest showcase of "green" architecture. The homes sell for $90,000 to $150,000, about 10 percent more than for standard construction, with the difference financed largely by the ministries of economic affairs and housing and environment. Ronald Rovers, architect with the Agency for Energy and Environment, which was responsible for the execution of Ecolonia, expects utility bills to be 10 to 30 percent lower than average. The gamut of energy-saving measures runs from sod roofs and solar collectors to a pond that collects gray water and rainwater for gardens, car washing, and toilets. Architect Renz Pijnenborgh, perhaps the most committed of Ecolonia's nine architects, uses only water-based paints, shredded paper for insulation, and—to protect rain forests and cut energy use in transportation—wood from fast-growing European plantations. Many of the measures used are invisible once the houses are completed— sewage pipes made of ceramic rather than PVC, for example, and floors of recycled gypsum rather than concrete. According to the Dutch ministry of housing, there are other green communities under construction, and at least some energy-saving measures are applied in 60 to 70 percent of the houses being built Ecolonia was officially inaugurated by Queen Beatrix, an indication that environmental awareness is making headway in the architectural mainstream. "This is not an experiment," says Rovers, "but a demonstration of what can be achieved here and now." *Tracy Metz*

New York State

Six Adults in Search of a Childhood— Through Playhouses







...llection of six
...layhouses
... the Katonah
...ough
...ated by
...r doors and a transparent roof (left), and Taeg Nishimoto's structure of increasingly tall, narrow transparent doors connected to bowed wood strips that respond to the opening of the doors (right), explore both the practical and dreamy sides of childhood—the transformation of architecture by the user and the integration of adult and child. Others, like Donn Dennis's tourist cabin perched precariously on a hollow rock filled with household debris (center), look at the foundations of individual lives. Jane Dodds is guest curator. ■

Briefs

Winners

Charles Correa has won the architectural art of the Japan Art Association's Praemium mperiale for lifetime achievement.

John Breshears , Busby Bridger Architects, as won Ove Arup's first Peter Rice Prize.

Paris-based Architectes Urbanistes has won ne Benedictus Award for the Banque Popuaire de l'Ouest in Rennes. The student inner of the laminated-glass competition, ponsored by DuPont and the AIA/ACSA esearch Council, was Elina Vaittnen of inland's Tampere University for her expanon of the Weimar Bauhaus.

Murder, He Wrote

. Martin's Press has issued "The Seventh acrament," a mystery about the serial murers of architects in a competition. Author mes Bradbury, formerly with Venturi. ott Brown, practices in Villanova, Pa.

Moves

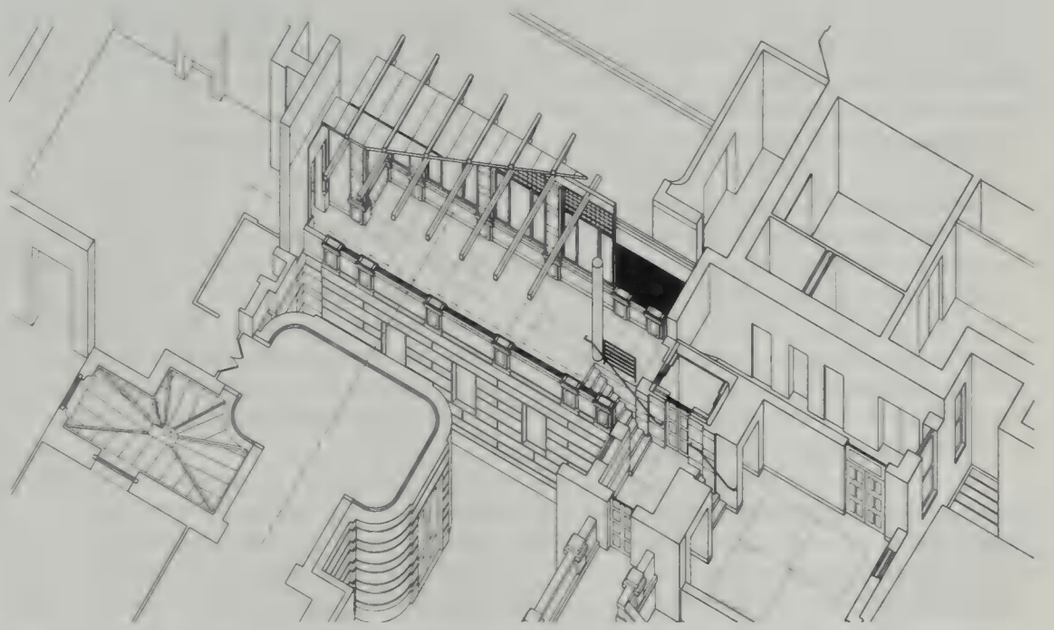
n a surprise move, CRSS Inc. sold all but independent power-plant business. The m, founded by William Caudill, John owlett, and Wally Scott in 1946, will lose its entity, becoming part of HOK at the final d-July closing. Its 220 employees will be pt on for now, but its Houston, Washington, eenville, S.C., and Atlanta branches will rry the HOK name, says HOK communicans director Dana Collins. While other chitectural firms were considered, CRSS O William J. Gardiner told RECORD, the mer rival and associate on King Saud Unirsity was deemed the "most appropriate." obs Engineering acquired the engineering d construction management units. *S.A.K.* he AIA has reorganized its headquarters ff and eliminated 23 positions in order to llocate funds and staff to priority areas: mber and public communications, governnt affairs, and information resources and tinuing education for members. Raymond Post, Jr., was elected first vice presint/1995 president-elect; Ronald Altoon, llip Gerou, and Carole Olshavsky, national e presidents; and James Anstis , secretary. illiam McDonough is the new dean of hitecture at the University of Virginia. obert F. Brown of Geddes Brecher Qualls ningham and Mario Gandelsonas are ling a multi-disciplinary team in a strategic revitalization plan for Red Bank, N.J.

Remembered

bert Elkington died in June at age 79.■

New York City

Landmark Museum Incorporates Townhouses in Accessible Design



James Stewart Polshek and Partners will renovate the part of the Cooper Hewitt Museum that links the original Carnegie Mansion with two newly acquired historic townhouses on the next street and, at the same time, makes the entire assemblage completely handicapped-accessible. The connective tissue (above) makes free use of stairs as design elements while providing elevators that respond to each level change. The original entrance will incorporate a ramp into a planting area. ■

Colorado

Angst Afflicts 44-Year-Old Design Conference

For much of its 44-year existence, the International Design Conference in Aspen has promulgated the gospel of good design to a world that didn't seem interested. Recently, though, design has triumphed in the marketplace: we wear athletic shoes cushioned by pump technology as sophisticated as the artificial heart valve. What is the mission of such a venerable conference in a world where "design" is actually accepted? Aspen has long embraced design-oriented businesses such as IBM and furniture maker Herman Miller. Today it's Disney and Sony, both hell-bent on somehow industrializing creativity.

Board members fretted over whether the format still works in our electronic age. Ubiquitous computers, though, proved not nearly as interactive as people. Participants included Boston architect Peter Forbes and critic Witold Rybczynski. Patch Adams, a doctor, became a clown as a form of self therapy and now treats seriously ill patients with humor. He hopes to build a distinctly mawkish "silly" hospital. The valley campus of the Aspen Institute saw the restoration of Herbert Bayer's Aspen Meadows (Backen Arrigoni & Ross—photo), and a handsome new concert hall by Harry Teague. *J. S. R.*



© Mark Darley/Esto

Jerusalem: And the Walls Came Tumbling Down

The recent peace between Israel and the PLO has given new life to projects in the City of David that break through barriers separating Arab and Jew.

By Tracy Metz

In Jerusalem, the city on the cusp of the Jewish and Arab nations, the recent peace agreement between Israel and the Palestine Liberation Organization has precipitated a mood of cautious optimism and in its wake a real-estate boom. Perhaps of even greater long-range significance are the first, as yet delicate, contacts between Israeli architects and Arab colleagues and clients.

"It's a time of excitement and uncertainty," sums up Jerusalem's chief city planner Elinoar Barzacchi. "We don't know which foot to dance on. But we're trying."

One example of the new *détente* is the expanding practice of Jerusalem architect Arthur Spector, who has received commissions from Arab clients for a housing complex and a sports center in the eastern, Arab part of the city. "For the sports center we formed an association with an Arab architect. There may have been some resentment on his part in the beginning, but we worked hard to assuage that."

Helping each other

Spector cites another sign of the changing times: "A colleague in the Gaza Strip called me recently to ask if I could help him find certain materials. It sounds so simple, but for this country it is truly unique." As the peace process moves forward, the Israeli government expects to build a number of new Arab communities in the Gaza strip and around the city of Jericho.

Problems on both the national and the local levels, though, cast doubt on how much progress can be made in Jerusalem. One of many clouds on the horizon is the appearance of what Spector calls "political planning." Until now the municipal administration had carefully defended the city's architectural integrity. For instance, the city has long required that all buildings be faced in local stone, and this bylaw remains in effect.

But the last municipal elections ousted Mayor Teddy Kolleck, who had fought for decades to maintain Jerusalem as a multi-ethnic city, and brought in a new coalition government dependent on ultra-religious Jewish parties. "What you're seeing now, for example," says Spector, "is that a developer is allowed to exceed the regulated density and height if the project's use is to the liking of the Orthodox parties. And the new mayor, Ehud Olmert, has come out in favor of tall buildings."

In the meantime, however, peace-induced optimism has given new impetus to existing projects, such as Moshe Safdie's Mamilla development just outside Jaffa Gate, one of the main entrances to Jerusalem's ancient walled city. Until recently, the project's English developer had been moving full-speed ahead on the residential part of the plan, but was reticent about going forward with the retail portion and had dropped the hotel altogether.

"Together with the changed mood came a new partner, the Tel Aviv developer Akirov, and now Mamilla will be realized as planned," says Safdie. "That means 280 apartments, 320,000 square feet of retail space, 1,000 parking spaces, a cinema, and three hotels, one which one is a five-star Hilton." A government-commissioned parking garage and bus terminal at Jaffa Gate, also designed by Safdie, are nearing completion, and Mamilla should be finished in 1996.

Plans for Damascus Gate Triangle

Safdie has also designed a solution for one of the city's most sensitive interfaces between the Jewish and Arab populations: the triangular space in front of Damascus Gate, the entrance to the Arab district of the old city and the hub of the Arab public-transportation network. In Safdie's view, both Mamilla and his plans for the Damascus Gate Triangle will help shift Jerusalem's center of gravity towards the old city and away from the uninspired modern city west of the ancient walls.

Although plans for the site have succeeded one another for decades, including those of a group of Safdie's Harvard students and a recent scheme by Barcelona-based architec



Michal Rovner, Untitled



© Steve Rosenthal

icardo Bofill, the triangle remains an nstructured wasteland.

afdie's task was facilitated by the decision to ove the planned bus terminal to the east of e triangle. But even so, the project must commodate delivery zones for the business- in the old city, public parking, and local and ng-distance taxis. "By putting the taxis and 0 parking spaces underground, I was able create a marketlike piazza, Prophets' omenade, along the old city walls," explains fdie. The upper plaza will be a green park- e commons with trees, and at the apex of e triangle there will be a new Peace Gate.

place for everyone

ty planner Barzacchi finds the idea of a een commons eminently suitable to Damas- s Gate. "Even the peace agreement cannot ing about mixed neighborhoods in 24 urs" she says. "That will take more than a neration. But Arabs and Jews can be gether and sip cola and tamarind juice in an en space. A garden is a good place for ace, because it belongs to everyone."

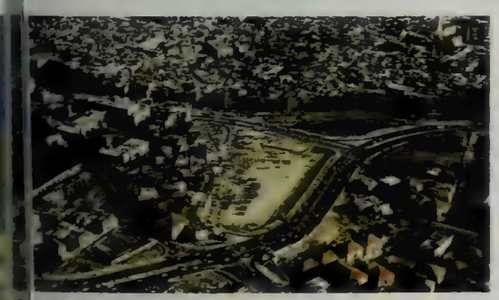
rzacchi's first priority for Jerusalem is to prove its infrastructure. "Now there is only main road running east-west from Tel iv. There is an urgent need for a north- th connection and a ring road that takes bulk of traffic around town instead of aight through it." Barzacchi's department is also working on a large-scale expansion scheme to the west of the existing city. This new area would provide space for housing, which is perpetually in short supply in this overcrowded country, and would include office parks where highrises banned from the city center could be located. Barzacchi expects municipal and regional approval for these plans within the next two years.

Another vast scheme is Modi'in, a new town for ultimately 240,000 inhabitants, located between Tel Aviv and Jerusalem and master-planned by Safdie as well. Modi'in was on the boards before the recent Israel-PLO peace agreement was signed, but has surged ahead in the expectation that settlers in the occupied territories will be returning to Israel as the Arabs gain control of Gaza and the West Bank town of Jericho. "The first district of 6,000 housing units—10 percent of the planned 60,000—is about to be offered to developers for tenders," says Safdie. "We're now working on the urban plan for the town center and an employment area comprising 9.7 million square feet of high-tech office and manufacturing space. But we have no illusions that all the people who live there will also be able to find work there." The Israeli government recently budgeted $70 million for Modi'in's infrastructure, and roads are now being built.

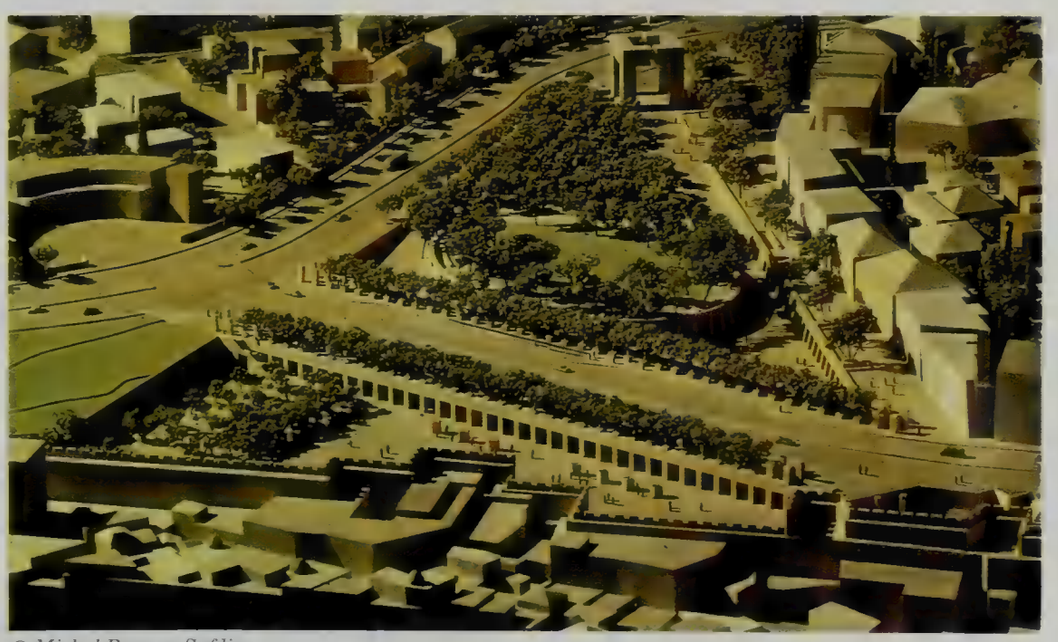
Architect Ada Karmi-Melamede, who together with her brother Ram Karmi designed the new Supreme Court building in Jerusalem, feels this is not only an optimistic time, but a poetic one. "The axis of Israel has always been north-south, but now for the first time we're thinking east-west. East was always a cul-de-sac. The notion that you can now move not only west towards the Mediterranean, but also east towards the desert, has an impact that reaches far beyond the bare topological fact. That's where the people of Israel were given the law," says Karmi-Melamede. "The desert is where justice and compassion meet. But none of us who were born here have ever been able to experience it." The buildings of Karmi-Melamede's Supreme Court are grouped around two walls expressing the north-south and east-west axes. "It makes so much more sense now," she says of the building's plan. "My own design has become much richer for me."

A social role for architecture

In Israel, says Karmi-Melamede, architecture is much more related to politics and social issues than in other countries. "It may sound naive, but we still believe in a social role for architecture. In this country architecture and planning are still acts of redeeming the land." The important thing now is not the physical changes, but the presence of hope, which was always a *fata morgana*. "Peace will change what we do and how we think—about the city, about architecture. The east has finally been added to our palette." ■



oshe Safdie and Associates



© Michal Ronnen Safdie

side Damascus Gate, one of the city's t sensitive contact points between Arabs Jews, Safdie has designed a project that bines underground parking and a taxi with a marketlike piazza. As it exists the site is unplanned and chaotic ve). The model of the project (right) s the landscaped commons and a new e Gate at one apex of the triangle.

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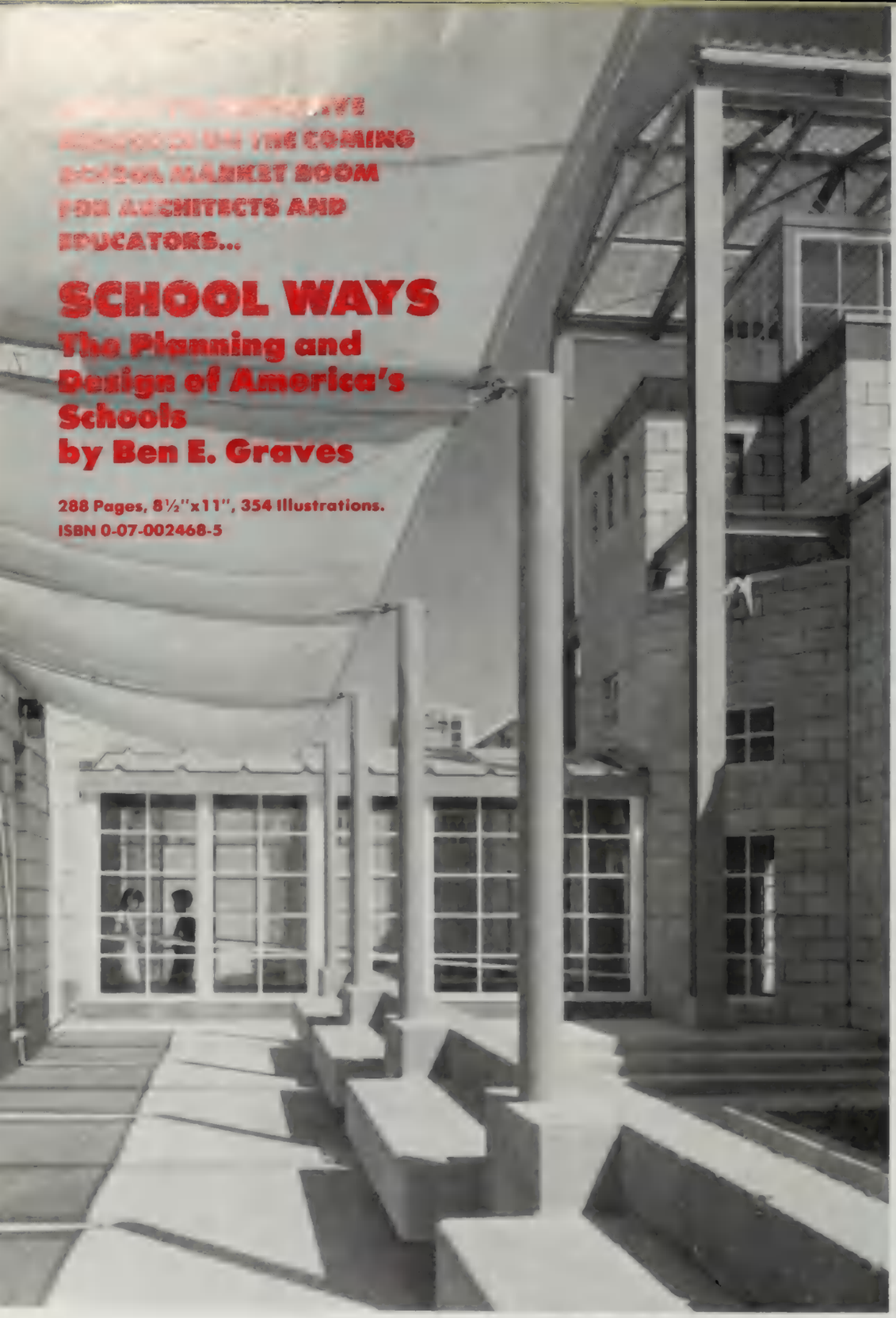
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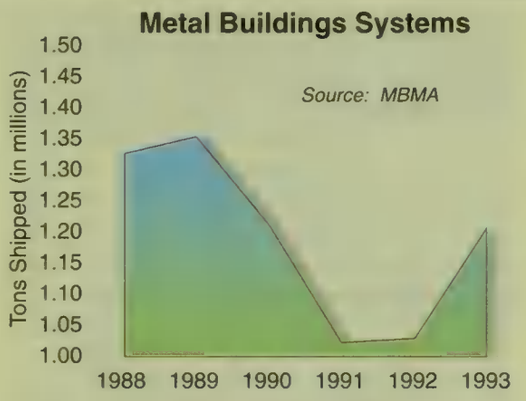


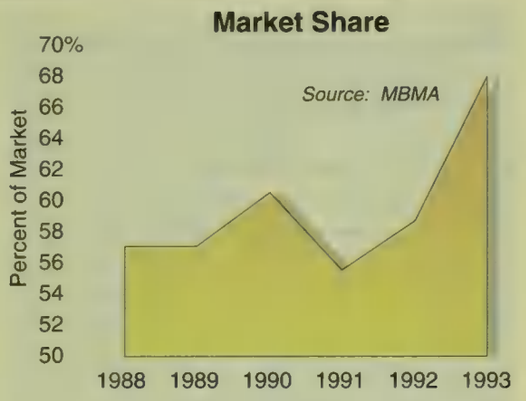
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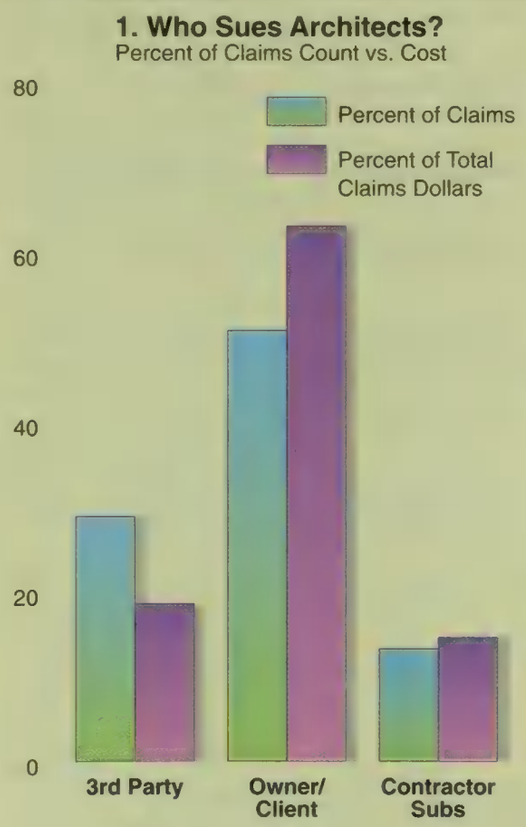
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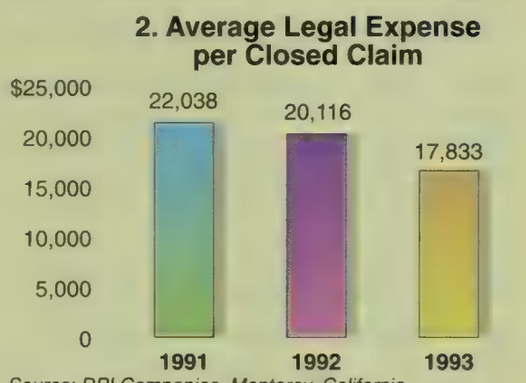


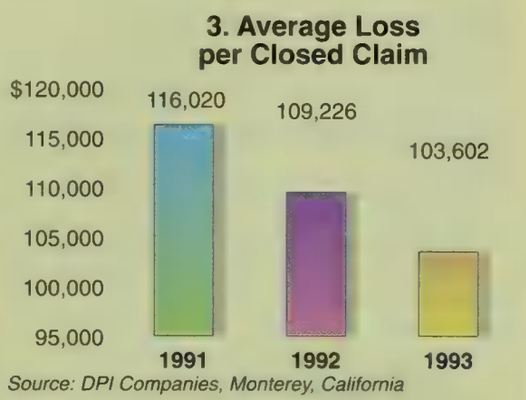


aking clients happy pays

shouldn't come as a surprise that insurance ims paid against architects go mostly to nts. The percentages shown (1) were ived from closed-claims statistics com- ed by the Design Professionals Insurance mpany. Preliminary figures suggest, vever, that different client types have very erent claims records. (DPIC is still verify- how different. Corner-cutting condo elopers look risky, for example, all too n leaving buyers holding the bag on con- uction problems. These owners then sue architect.) Claims are predominantly filed economic and property loss; bodily injury ted somewhat less often. DPIC has also ked the record of Alternative Dispute olution (ADR) to see if it actually roves claims resolution. The percentage isputing parties using ADR (usually liation) has risen steadily from just 10 ent in 1991 to nearly 30 percent in 1994. n legal expenses and the cost of the claim f have steadily fallen as a result, says C (2, 3). The company is so heartened by performance that it offers reduced uctibles to those who use ADR. ■







e Profession s Month

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Loose Ends at AEC: Among news at this years' AEC/Systems computer show was AutoCAD's impending Release 13, which may cause "two years of confusion on standards." *Page 30*

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Knowing When You've Made It

By Karen Haas Smith

This is what Bill Fanning, an editor of the *Professional Services Management Journal*, (PSMJ) has to say about the new design firms that have sprung up in the last few years. "If this crop were rated like a football or baseball team, I'd say it's not very deep. They don't have the drive. Only the tough will emerge." Fanning is not implying a generation of sub-par performers. He's referring to the fact that the majority of those who have started new firms since 1990 didn't volunteer for entrepreneurship. Laid off as firms downsized, they became self-employed as an alternative to unemployment. There is no accurate count of the new firms out there, but anecdotal evidence suggests that new, small firms always proliferate in a downturn. Do you have to be an adrenaline-pumping, cut-throat competitor to succeed? How do you know when your new small firm has made it?

Many of the self-employed-in-spite-of-themselves contribute to the gloomy statistics about new-firm mortality, but the demise of their practices may simply mean that they found new employment, which they prefer.

You're really in business when . . .

Fred White, editor of *The Zweig Letter*, a management newsletter for design firms, offers the following indicators:

- You hire your first full-time employee, knowing it means you'll make less money yourself over the next few months.
- You borrow money to buy or lease computers, plotters, and other equipment, which will take two or three years to pay off or depreciate.
- You move out of your spare bedroom and sign a lease on some real office space.
- You see yourself starting to make the same business mistakes your former employer did—and resolve to do it right this time.
- You turn down a job offer from an established firm because you don't want to work for [illegible].

[illegible] you're [illegible] commit[illegible] [illegible] fallback [illegible]."

What does a startup cost?

"You will sink more than a year's salary into the business in the first year," Fanning claims. "In terms of time without pay, equipment, and operating costs, it takes about $100,000 to start your own firm today, because no firm can function without computers." But that's just a rule of thumb. If you don't have $100,000 to invest—a not uncommon situation—there are other options.

- Chicago architect Linda Searl borrowed about $50,000 when she restarted her private practice in 1990 after splitting with a partner. She shares office space, equipment, and administrative staff with another small firm, which happens to be owned by her husband, Joe Valerio. ("Our design approaches are too different to work together.") Linda has four employees and Joe has five; by combining forces, the two firms were able to afford CAD equipment. She expects the debt to be paid down by year five.

- Manuel Fernandez-Casteleiro and Joe Parsons started their New York City partnership in 1990 after working at Ehrenkrantz and Eckstut together and now run a varied practice. After a slow start due to the recession, they say they will have their debt paid off by 1995—after five years in business. That seems about average now.

- Philip Freelon invested $20,000 in personal savings and $40,000 of bank financing to start his Raleigh, N.C., practice in 1990. "You've got to figure on at least six months of expenses—including salaries and office overhead—to start, so you can float, unless you already have a project," Freelon says. Within 16 months, the debt was paid. Freelon's firm has grown steadily by concentrating on public-sector work, and he now has 13 employees. He keeps borrowing working capital and now has more than tripled his line of credit. Because he wanted to target larger projects, he rented office space from the beginning but saved money by working out of a room in an engineering firm for the first four months before he leased his own space.

Freelon's previous background—he was a principal and vice president for architecture for O'Brien/Atkins, a 140-person A/E firm in Raleigh, before going out on his own—doubtless contributed to this better-than-average track record.

- Big things can grow from small investments. With $25,000 in cash and $25,000 of credit-card loans, five Washington, D. C. employees of Interspace, Inc., a major national interior-architecture firm, walked out in 1984 to form their own firm doing similar work. They immediately hired five employees. In 1991 architect Joseph Boggs joined the firm with his staff of 10. A. O. Boggs is now a multi-service interior-architecture, architecture, engineering, and strategic-planning firm with 100 employees and offices in Washington and Raleigh.

If the money commitment really throws you—remember that commitment is the bottom line, not money. James Cutler, a nationally famous residential designer who is currently working on software multibillionaire Bill Gates' residence, started in 1977 in a rented room in the attic of a house in Seattle. "I had a phone, two sawhorses, and a door, and I did doghouses and kitchen remodels," Cutler said. He made it on an unshakable commitment to good design, a determination not to go back, and some lucky breaks. Yes, he started in the pre-computer age—but he also weathered a tough recession in the early 1980s.

Staying afloat

"The most popular misconception is that going into business for yourself is a way for the person who is tired of all that management stuff to get back to practice," says PSMJ's Fanning. "You will actually spend even more time marketing, writing checks, and so forth when you run your own firm."

Almost everyone still gets jobs based on one-on-one relationships. Belmont (Monty) Freeman has been in private practice in New York City since 1986, when he and former partner Max Pizer struck out on their own from Davis Brody and Associates. The new offices he designed for the New York City Opera have received a lot of publicity this year, one of his best projects ever. How did he land the job?

"I was doing work on a co-op apartment years ago, and I met the treasurer of the co-op

lew firms have their rewards and their nightmares. How do you now when to keep going—and when to quit?

ard. Although she was not introduced by r stage name, I was pretty sure she was the ezzosoprano I'd seen perform just a few eks before. She was thrilled that I recog-ed her." Later, the soprano asked Freeman do some work on her apartment. "It was st adding some French doors and doing a lcony. But we became friends." And thus it s that Freeman was lined up for one of the st artistically satisfying jobs of his life. hat's why I never turn down a bathroom nodel," Freeman says. "You never know ere things will lead."

u call all the people you ever knew," says rry Lord, who left Heery International h partner Terry Sargent in 1983 and rged with Tony Aeck in 1992 to grow to the person firm of Lord, Aeck and Sargent in anta. Fernandez-Casteleiro and Parsons isoned their original marketing plan—tar-ing second-tier developers and minority -aside government-contract work—within weeks. "We quickly learned that the devel-rs we were counting on were disappearing hrinking (it was 1990), and the govern-nt won't give minority certifications to nd-new businesses," Parsons says. "So we centrated on marketing to people who w us."

ere things go wrong

lerpricing services and picking the wrong nts are common pitfalls. How does a fledg-practitioner avoid those who select a ll or new firm because they perceive they work cheaper? "Your fees have to at least t expenses and offer some profit," says ultant Fred Stitt, publisher of *Guidelines* tice aids. "If you lose money or just break on one job, you'll have to grab another t away. It's a dangerous pattern."

suggests a two-pronged strategy for ling the pricing pitfall. First, publish a ng range and stick to it. Using services ribed by AIA documents, "Offer more one rate: a baseline (the absolute num it takes to get a permit), medium, average tasks most firms provide), and comprehensive (adding those additional ces suited to client and project)." Second, ate clients. "Most clients don't have any f the complexities involved in design ces. Explain that if others are offering



Doing It for Themselves

Firm: Belmont Freeman Architects New York City
Started: 1986; split with partner 1994
Employees: 3
Projects: Offices for New York City Opera; renovation of James Beard Foundation; lab, dining hall, and auditorium renovation for Columbia Presbyterian hospital; funeral homes.
Why they started: "I had a great job," says Monty Freeman. "But after 10 years at Davis Brody, it seemed time to do something else in my career, or I never would. Max Pizer and I had been at Penn together and had worked on a lot of projects together. We decided we could do it for ourselves."
Finding work: Freeman's and Pizer's background doing laboratories and hospitals for major institutional clients helped develop a medical specialty. Columbia's Medical School and Queens Hospital are now steady clients. "A lot of architects are afraid of medical work," Freeman says. "You have to be real careful, master the codes, and get good consultants, but really it's nothing to shy away from."
How they knew they'd made it: "Latching onto institutional clients with projects in the $1- to $2-million range lifted us from the subsistence level."
Aspirations: "My artistic profile is as high as it's ever been, even though my bank account is empty. I am confident that things are going to be improving dramatically soon."



Splitting Me[illegible] Starting Over

Firm: Searl and Associates, Architects Chicago
Started: 1985; split with partner 1990
Employees: 4. "As large as 10 [employees] would be okay, but I wouldn't want to be bigger than that unless I took on another partner," says Linda Searl.
Projects: Residential, including remodels, additions, and a 60-unit cluster-housing project for a Chicago developer.
Why she started: "It had to do with my sense of independence. The only way I'd really be satisfied as an architect was to do my own work. It was such a strong desire that it was worth the risk."
Finding work: "It takes a long time to build a base of clients. I didn't grow up in Chicago, so it was slow. It's funny how you get clients. I had one referral because a woman asked her dentist for an architect, and the dentist had heard about me from another client . . ."
How she knew she'd made it: "After five years in practice, things were really starting to take off for my former partner and me. We were starting to get repeat business and invitations to submit qualifications."
Aspirations: "I always wanted it to be a very high-quality design *and* service firm. Right now we do probably about 80 percent residential work. I'd like it to be 50 percent residential and 50 percent other institutional and commercial projects."



Relying on the Public Sector

Firm: The Freelon Group
Research Triangle Park, N. [illegible]
Started: [illegible]990
Employees: 13. [illegible] a certain [illegible] "bureaucracy overtakes [illegible]," [illegible] Philip Freelon, [illegible] and respon[illegible] [illegible]

Projects: [illegible]

Why he started: [illegible]

Finding work: [illegible]



When Plan "A" Fails . . .

Firm: Parsons [illegible] Fernandez-Casteleiro
New York [illegible]
Started: 1990
Employees: One full-time, one part-time
Projects: 20 percent government/municipal ([illegible] Botanical Garden, a park and theater renovation in New Brunswick, N. J); 25 percent residential (including "affordable" adaptive re-use); 25 percent corporate (addition to a life-insurance company office, renovation for a pharmaceutical company), [illegible] and commercial.
Why they started: "The large firm was complacent, and we were bored. We wanted to create a better quality of design."
Finding work: The partners dropped their early marketing plan when they found devel[illegible] [illegible] government clients [illegible]. For two years we concentrat[illegible] [illegible] people who knew us. All of a sudden, government officials started to pay [illegible] associates realized we could give them better service as two individuals rather than employees of a bigger firm."
How they knew they'd made it: "We started to get repeat clients, which we took as a sign that things were going well. The second [illegible] was when ARCHITECTURAL [illegible] and *Interior Design* did articles on our [illegible]. We got one job as a direct result of [illegible], but more importantly, it [illegible] that as a young firm we had arrived."
Aspirations: "Our goal is to continually [illegible]. To what? We don't know. [illegible] Larger [illegible] highly organized but over-empha[illegible] at the expense of the design [illegible] the product. We spend [illegible] with the client and provide [illegible] more economically. We have a [illegible] now, the ability to [illegible] architecture."

lower prices, clients will probably get less service."

Select your clients carefully, even when it seems anyone who calls is a godsend. "Turn down hard-nosed clients," Stitt advises. "They'll come in with drawings, bad-mouthing the firm that produced them. They probably didn't pay the other firm and won't pay you. Some clients never intend to pay. They'll sue instead." Stitt says it's smart to screen potential clients by calling other firms they have dealt with and checking credit histories. (You'd think competitive instincts would cause firms to be uncooperative. Stitt says most hope you'll help them in return.) "[illegible] someone comes across as a chiseler, they probably are," Stitt says. "Avoid them like th[illegible] plague. And if you're in residential work, sta[illegible] away from couples with domestic problems. Some people use a construction or remodeli[illegible] project as a way to mend marital problems. Instead it places more stress on the relation[illegible]ship, and the architect suffers."

Payment problems are another common, but avoidable pitfall, especially for residential work. "Most new practitioners doing residen[illegible]tial work don't realize that it's okay to ask t[illegible] be paid a deposit in advance," Stitt said. "They can and should be paid up front; around 20 percent is a good ballpark figure for residential work." Market research help[illegible] too. Stitt advises new practitioners to make the rounds of other architects in their comm[illegible]nity who offer similar services and seek advice on how to avoid problems.

An additional tactic that works, according t[illegible] Stitt, is to put clients in touch with effective economical financing sources, real-estate agents, and materials suppliers.

Linda Searl, the Chicago architect, says sh[illegible] has been lucky about collections. "My first rule is to bill on a regular basis. I bill every month. It keeps people aware that you are noticing if they fall behind." The one time s[illegible] did have a problem, Searl went to small-claims court and won. "I paid the lawyer all the money, but the principle was important[illegible]"

In short, say veterans, delivering high-qua[illegible] design is not enough. Recognizing that the process is as important to the client as the

"The bottom line is you're really in business when you make a commitment to succeed, stop thinking about fallback positions, and decide there's no going back."—Fred White, Mark Zweig & Associates

roduct is the key to avoiding problems and urturing the kind of relationship that leads o repeat business and referrals. "You make eople feel that you're on their team and eady to respond," says Larry Lord. Lord lso believes in "ending strong." "We spend a t of time commissioning the building, aking sure the occupants are comfortable nd understand how the building was intend- d to function," Lord says. Julia Rayfield, rincipal at A. O. Boggs, which serves a rgely blue-collar and middle-class residen- al clientele in Fresno, Calif., says, "We help ur clients with issues that come up through- ut the life of a building, long after it is nstructed: energy conservation, indoor-air uality, documentation, space inventory, arge-back reporting, building surveys . . . . his service diversification has been our wing grace."

esign: ■ *service* business

arry Lord's background is strong in innova- ve services—he was in service development Heery International. He sees strategic anning as the foundation for a good client lationship and offers a range of other con- lting services as well.

f we can get in and understand what their ssion is, we can come up with a way to help em be what they want to become," Lord plains. "We can advise them on where to get her essential services like financial support d real-estate evaluation. Since they will ve thoroughly considered the strategic portance of their facilities within their erall mission, it is an easier process to work h them later and to understand the vari- es that may come up."

lients need assessments to help them ide whether and how to renovate build- s," says consultant Frank Stasiowski. chitects and engineers didn't used to do t sort of thing."

ding ■ niche

ou really hate the marketing and manage- at tasks that go along with the typical -service architectural firm, there are other s to go independent. Don Anderson devel- d a technical specialty in energy analysis ing his six-year career with the Washing- office of Burt Hill Kosar Rittelmann, a firm that has had long-standing research contracts with the Department of Energy's Office of Buildings. Since 1990, he has had a subcontract doing computer simulations for a DOE contractor.

"I left Burt Hill at a time when administrative and managerial responsibility would have begun to overshadow my ability to do the technical work," Anderson says. "This way, I can escape all the management headaches and still do work I enjoy with teams of people that I like. I've always worked for the government sector. I'm hooked up to a big wagon with lots of money, and I'm a little flea along for the ride."

Leslie Gill and Karen Bausman combine teaching, theoretical architecture, and building design projects in a unique New York City practice they began the year they graduated from college (The Cooper Union, 1982). They vary the mix from year to year according to what comes along. Bausman won the prestigious 1994 Rome Prize in Architecture. Both have won the Cooper Union Citation for Excellence in Architecture.

California architect Mickey Muennig has been doing carefully sited residential projects in Big Sur since 1963. In the last few years he's started to gain widespread recognition. "I always did little houses and didn't make much money until 1989, when I did the Post Ranch in Big Sur, an environmentally sensitive 30-unit inn." The resulting publicity has brought him a series of hotel and residential projects in Fiji, the Virgin Islands, China, and the Canton Islands. A sole proprietor until 1989, he now has two people doing drawings for him. He'd like not to get any bigger. "It's getting a little so I can't keep up with it," Muennig says. Now located in bucolic Bainbridge Island, west of Seattle, Jim Cutler is widely published and has won many awards. His firm could easily grow. "Every time we get bigger than 10 employees, there are more meetings, more money problems, more management. I get stressed. I don't have time to draw." Another reason to stay small? "I have three kids; I want to be a Dad."

Growing pains

As time goes on, some of the reasons that drove a firm's formation don't continue to apply. "I really didn't want to struggle any more," explains Max Pizer, who was Monty Freeman's partner for eight years. This spring he joined Gensler and Associates as a project manager. "Some people want it more than others. It's not just a dollars and cents thing." Comments Linda Searl: "Splitting a partnership is like getting a divorce. Even if it's a friendly divorce, it's still difficult. You have to decide who is going to take which employees, which clients. Clients see you as a start-up business again." Carol Karasek's New York City firm hit the "glass ceiling" encountered by many woman-owned firms. Though her five-person office did more than two dozen small projects over eight years for a large private client that operates a major medical center, her firm was not considered for work above $1 million, even though it was qualified and had an enviable track record. "It took us a while to figure out there was a problem," she says. To overcome it, "we just talked. We'd remind the project managers that we were capable of doing the work. You can't use any strategy other than being gracious and reasonable. You can't complain or you're out." The firm continues to work for the same client, and eventually was awarded the larger projects they sought. Karasek credits changes in management, however, more than her firm's powers of persuasion.

How you know you've made it

Fred Stitt: "Most people who get into practice don't really plan it out. Basically, they're drifting. They know it would be silly to do a deck remodel without a plan, but they don't plan their careers. There's a major differentiation between those who plan and those who don't. Without a plan, you'll drift in and out with the tide."

Bill Fanning: "What gives a firm viability and maturity is when they have standards of practice, as opposed to making it up as they go along. That includes systems to do work, a supply of marketing materials, a business plan, knowing whether they are making money or not, and regular paychecks."

Fred White: "You know you've made it when you've hired someone. Until you can sell more work than you can do, you will have a hard time making it as a viable business. Otherwise, you're an architect for hire." ■

Good News and Bad News

By Lynn Nesmith

With scant indications that the commercial construction market will turn around in the near future, architects who used to not bother with the bureaucratic regulations and paperwork of a government contract today find that working for Uncle Sam offers more than economic survival in lean times. Architects' ambivalence about working on government projects stems not just from the paperwork and bureaucracy, but from the cost and complexity of the selection process, the poor compensation such work brings, and the difficulty of actually building high-quality work. There is change afoot in all these areas, but professionals will have to lobby hard to foil the tendency of Congress and bureaucrats to add burdens to the architects' job at the same time they seek to maintain or reduce both fees and construction costs.

Where the jobs are

As a group, the agencies of the federal government form the largest client for design services in the world, annually investing approximately $42 billion in public projects. One of the most prolific federal clients is the General Services Administration, which sometimes is referred to as the world's largest landlord and oversees a construction budget of approximately $1.2 billion annually. But scores of other agencies direct their own building programs, including such diverse bodies as the United States Postal Service (USPS), the National Park Service, the State Department's Foreign Building Operations, the Federal Bureau of Prisons, the Army Corps of Engineers, the Veterans Administration, the U.S. Fish and Wildlife Service, and the Smithsonian Institution. And working for one public entity can be completely different than working for another. "As a general rule, the smaller the agency, the easier the process," says Colden Florance, of the Washington, D.C., firm Florance Eichbaum Esocoff King, who has done a range of public work for various federal clients over the last 35 years.

Lynn Nesmith is a writer specializing in architecture based in Alexandria, Va.

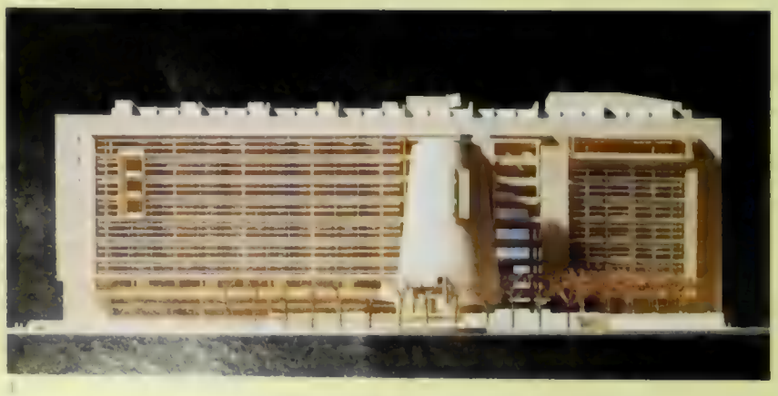
Quality-based selection under fire

"Public architecture must have a certain character," maintains Chicago architect Margaret McCurry. "People base their attitudes about this country on its buildings. If public buildings are boring or appear just like any other structure, that translates into a lack of respect for the entire governmental process." Judge Douglas P. Woodlock, of Boston, who has been involved in setting building standards for federal courthouses, agrees: "Over the past 35 years we have littered the landscape with poorly designed federal buildings that have deteriorated and are no longer an effective part of the government's inventory. Intelligent design—cost-effective schemes that provide permanence, clarity of plan, and a sense of dignity—is money well spent." While this no doubt reflects the feelings of many officials and much of the public, it has been extremely difficult to maintain these ideals in the sometimes grueling design and construction process.

In some precincts, the message is getting through. Last year, Vice President Gore's National Performance Review, a comprehensive examination of the workings of the federal government, endorsed selection of architects and engineers on the basis of qualifications and not price. (The report, commonly called "Reinventing Government," made 20 recommendations to simplify procurement of government services.) It called for no revisions to the Brooks Act, a procurement law passed in 1972 that requires federal agencies to use such "quality-based" selection (QBS) of architectural consultants.

Nevertheless, some members of Congress threatened to add amendments to a new federal procurement bill that would allow some federal building projects to be awarded to the low bidder. Intense lobbying by professional engineering groups and the AIA appears to have stopped efforts to erode the Brooks Act for now. "We argued that the

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1

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2

While quality-based selection is safe (for now), and improved design is a higher priority, low fees and burdensome project-delivery methods make government work a mixed blessing.

government shouldn't be penny wise and pound foolish," explains AIA Group Vice President for government affairs Robert Peck. Among points Peck and others made: Design fees represent less than one percent of 40-year life cycle costs, yet design decisions can hugely impact lifecycle costs; that price, when it becomes part of the selection process, becomes the overriding factor," creating disincentives to take the time to design-in higher quality; that the cost of proposal preparation for the government would outweigh savings derived from lower fees, which is why, AIA and ACEC argued, government procurement officers in most agencies favor QBS.

Congress lashes out—at doorknobs

Pressure to keep the cost of buildings down has become especially vocal recently, focusing mostly on GSA's huge courthouse-building program [RECORD, January 1994, page 24]. Critics in Congress have lashed out at showers and kitchenettes for judges. Other "perks" sound lavish but may not be: *Engineering News-Record* quotes Maine Senator William Cohen: ". . . brass doorknobs, custom lighting, and special carpeting contributed significantly to the cost of the . . . courthouse at Foley Square in New York City."

GSA itself was not happy with the way many of the courthouse projects were turning out. After a six-month study of nearly 200 federal building projects, called "Time Out and Review," GSA targeted savings of more than $1.2 billion. Although some trims were identified in projects that were well along in the design stages (with targeted dollar savings to be found through value engineering), the savings were largely achieved by cancelling several projects, and a reduction in square footage for others. In a further move to respond to Congressional criticism, GSA is forming a Courthouse Management Group with the Office of the U.S. Courts to create more standardization in court facilities, and to be sure that what critics might see as unduly luxurious amenities do in fact have a legitimate programmatic purpose.

Time for a raise

Architects' compensation remains at uncompetitive levels, particularly design fees capped at no more than six percent of anticipated construction cost. "The six-percent fee structure is an anachronism," argues Robert Peck of AIA. "It's an artificial cap that's been in place since the 1930s." Though Pei Cobb Freed and Partners has done several prestigious federal projects, James Ingo Freed says, "There are some projects we can't afford to consider." A recent survey found that governments were the least profitable client type [RECORD, March 1994, page 25]. A much larger lobbying effort than has so far been mounted will be required to improve government compensation in these deficit-obsessed times, observers say.

Taking quality selection one step further

Architect Gary Haney of Skidmore, Owings & Merrill/Washington, like a host of architects working for the federal government, credits Edward Feiner, deputy director of GSA's Office of Design and Construction, for "single-handedly turning around the agency" and raising interest in quality public architecture. Feiner is the driving force behind the new "Design Excellence" selection process at GSA. Introduced in January 1994, it now places less emphasis on the scorecard approach symbolized by the dreaded SF 254/255 forms that firms seeking work have used in the past, and more on three qualitative criteria: the firm's overall design strength (not just "How many of these have you built?"), the philosophy of the lead designer, and the designer's vitae, including recommendations and design awards. The new system should also reduce the cost to compete for work (GSA had found too many large projects were going to too few firms), and open up the selection process to small and medium-sized firms, and minority firms that haven't had a GSA-style track record with which to compete.

Already used for several major public build-

Ron Johnson.



W. Fentress J. H. Bradburn and Associates, architect). Gruen Associates/Zimmer Consul Frasca have clad the Ronald Reagan Federal Building and U. S. Courthouse Santa Ana, Calif.] in travertine (4). The

© *Peter Xiques*



4

FBI's Washington Metropolitan Field office is the first National Capital Region project to be designed in metric (5). Because it is located in Washington's Judiciary Square, approvals for Skidmore, Owings & Merrill's



5

design must come from the U. S. Commission of Fine Arts, The National Capital Planning Commission, the State Historic Preservation Office, and the President's Advisory Council on Historic Preservation.

"The six-percent fee structure is an anachronism," argues Robert Peck of AIA. Still, observers say that raising the cap will require a much larger lobbying effort than has been mounted so far.

ings, Design Excellence is a two-stage selection process. GSA first invites firms to respond to an RFP with what Feiner calls a "quarter-inch portfolio." "To reduce the cost of getting on the short list," Feiner explains, "we absolutely limit the amount of information architects are allowed to submit in the first round." A modified SF-254/255 form is required, but the revised document is little more than a cover sheet for the portfolio. GSA is sponsoring conferences to explain the new two-stage selection process

An in-house GSA panel, sometimes supplemented by a client representative (such as a judge or clerk for a courthouse), invites three to six firms to continue to phase two. Short-listed firms are given 30 to 45 days to prepare a full 254/255 form describing comprehensive teams, management philosophy, and so on. The final selection is based on interviews. On projects of more than $25 million, a private architect/advisor serves on the selection panel after the short list has been announced. (Government ethics requirements prohibit the peer advisors from voting.)

The Omaha, Neb., Federal Courthouse was the first project to follow the new procedures. Margaret McCurry, who served as the peer advisor, called the two-day interview process "one of the most enlightening experiences of my professional life," and praised the GSA architects involved on the panel. Pei Cobb Freed was awarded the commission over a short list that consisted of Philip Johnson, Kevin Roche, John Dinkeloo & Associates; Cesar Pelli Associates; and Ralph Johnson of Perkins & Will.

The design team for a new federal courthouse in Scranton, Pa., was also named under the new process. Daniel Kelley, of MGA Partners in Philadelphia, who made the short list only to lose the final decision to Bohlin Cywinski Jackson of Wilkes-Barre, Pa., said that "we were well served by GSA." Kelley said the panelists had a "mature attitude" and were not "rigorous about style."

For selected projects, there will be a third phase, a limited competition among architects short-listed from RFP responses. This process is being tried on a $35-million federal courthouse in Beckley, W. Va., for which Shalom Baranes Associates, Spillis Candela/Warevke, Robert A. M. Stern with Einhorn Yaffee Prescott, and Myers Associates are competing. Each team will be compensated $20,000 to develop design schemes.

The Design Excellence process is still being fine-tuned. McCurry and others involved objected to the fact that the five short-listed teams on the Omaha courthouse project were required to produce design schemes. Feiner and GSA have agreed not to make schematic designs or uncompensated "partial solutions" a normal basis for selection. But, as one government architect pointed out, "Architects are their own worst enemies when it comes to giving away free designs." Says Feiner, "At first this was perceived as a 'star search.' It's not. It's a talent search that encourages all creative and talented firms to participate." Says Judge Woodlock, "Designers from small firms with special design excellence are realizing that they'll be taken seriously at GSA."

A menu of project-delivery options

Over the long term, GSA and other federal agencies continue to explore the cost and time advantages of alternative project delivery schemes. Most prominent is design/build (more on that below). Within the limits of federal procurement policy, the GSA is increasingly pursuing "partnering" (agreements and procedures intended to reduce grievances and finger-pointing). As conceived now, one partnering session among clients, users, and design team would occur during the design phase, then one prior to construction to include the selected contractor and construction manager. "We'd like to bring in the expertise the contractor can offer earlier in the process," says John Petkewich, acting director of GSA's office of design and construction, "but since so much of our work is done through a bid process we haven't

Tale of Two Projects

Stung by criticism that government-procurement procedures add unnecessary time and cost to projects, agencies have experimented with a variety of procedures to enhance project delivery. Herewith a tale of two purportedly meritorious attempts at increased efficiency and higher-quality purpose, both in Washington

Thurgood Marshall Judiciary Building

1988: [illegible] John M [illegible] Boston [illegible] agreement that requires no upfront government funds

1989: Construction begins to a design that stays below the existing height limit

1992: The project is dedicated on-time and under budget (opposite right).

Federal Triangle

1987: Congress approves a plan for a lease/purchase design/build project including an International Culture and Trade Center (to promote American products), government offices, and profit-generating retail space, theaters, and a swimming pool, (opposite left) The Pennsylvania Avenue Development Corporation (PADC) expects 1994 opening. One agency estimates at $362 million, another $500 million. Critics predict costs as high as $800 million

1988: One agency re-estimates the project at $461 million, then $500 million.

1989: Pei Cobb Freed and Partners and the Delta Partnership, developers, bid $738 million and are chosen for the project. The low minority participation is criticized.

1990: Saratoga Development, the low bidder at $578 million, sues PADC. The government puts the project on hold, now predicting annual losses from the trade center at $18 to $24 million. $82 million is cut from the project and planning resumes.

1992: The Trade Center is dropped to be replaced by government offices.

1993: Press report estimates project at $791 million. (Official figure remains $656 million.) Trade Center reinstated.

1994: Trade Center services under study. Saratoga suit dismissed.

figured out a way to do it." GSA will also use value engineering more aggressively to identify savings. But dollar-savings targets assigned to projects will not compromise quality or program, claims Petkewich.

Making design/build work

The Army Corps of Engineers has enthusiastically embraced design/build, completing approximately 30 such projects since 1986. Architects are participating in design/build ventures, but usually by necessity rather than by choice. The complaints are the usual ones—that the concept unfairly shifts responsibilities to the design team and creates a larger divide between designer and user. To develop enough detail to provide a firm bid price, teams may have to do anywhere from 20 to 75 percent of schematic design—usually with strictly limited input from the client. Such submittals are also extremely expensive to prepare, and compensation, when it has been offered, does not come near covering costs. In a recent design/build competition for the Army Corps' Sparkman Center in Alabama, 16 contractor and A/E teams presented very comprehensive design and bid submittals. Daniel Duncan, an architect with the Corps, acknowledges that lessons were learned from the process, and said that in the future the Corps will attempt to "balance the risk of the potential offerers and the government." AIA and ACEC have urged federal agencies to short-list applicants before a bid is requested, and compensate the finalists.

For the past 10 years, the USPS has also employed design/build for approximately five projects a year, usually mail handling and distribution centers, according to James Binkley, senior architect for major facilities. The USPS has found the single-source, fast-track method of product delivery to be both easier to manage and quicker to build for such fairly standardized structures. Quality-based selection is used for branch post offices, or "customer services centers" as they are now called. Architects have been encouraged to use the USPS's "kit-of-parts,"—standardized program elements that are sized and arranged by the designer to suit the mix of patronage expected at a given site.

Several years ago, GSA jumped on the design/build bandwagon. A controversial design/build competition last year for an Internal Revenue Service building in downtown Detroit pitted 11 bid teams for a $100-million contract. Participants spent anywhere from $250,000 to $500,000 to participate and received no compensation—a huge risk for a small business. Others wouldn't participate, since the lowest cost became the selection priority. Few architects who have participated in GSA design/build competitions support the process. The White Plains, N.Y., Courthouse competition was "brutal and grueling" says Haney of SOM. "Fortunately, our team prevailed." Nor does GSA's means of doing design/build solve the problem of lack of contact between architects and end users. "The government has to be very careful not to give any competitors an unfair advantage," explains William Pedersen of Kohn Pedersen Fox. "This formality reduces the chance for open discussion during the competition phase."

In spite of these concerns, Kohn Pedersen Fox won one of the largest of GSA's design/build projects, the massive Foley Square Courthouse, nearing completion in lower Manhattan. Using a conventional procedure, KPF is designing the new Portland (Ore.) courthouse in a joint venture with BOOR/A. Pedersen continues to find the "face-to-face dialogue with the judges and clerks" more satisfactory as the firm examines design alternatives.

To improve design/build, GSA, like other agencies, is trying to reduce the amount of information firms would have to provide prior to selection. Though the government's current fixation on delivery is important, says GSA's Feiner, it can't be allowed to detract from the product. "My biggest concern is that public architecture will suffer from not focusing on what the real issues are." ■

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Deterioration and Failures of Exterior Plazas

By Louis F. Estenssoro and W. F. Perenchio

Exterior plazas are among a building's most maintenance-intensive areas. They have to survive severe weather, de-icing salts, cleaning chemicals, and abuse by traffic. For these reasons, they need special attention in their design, construction, material selection, and maintenance. They perform poorly when one or more of these items are disregarded.

This article takes a forensic approach to both on-grade and supported plaza installations—recommendations are put in a context of problems commonly encountered. Plazas built with incomplete and non-complementary specifications and drawings often have flaws. Several organizations offer guidance to specific installation types. ASTM C-666, 672, 67, and 97 specify minimum performance of concrete, brick, structural clay, and natural stone; the AIA's Architectural Graphic Standards and technical notes by the Brick Institute of America and the National Concrete Masonry Association also recommend plaza-design details. However, the designer should use these sources only as guidelines, adapting the details to the specific climate, drainage, and load conditions at the site.

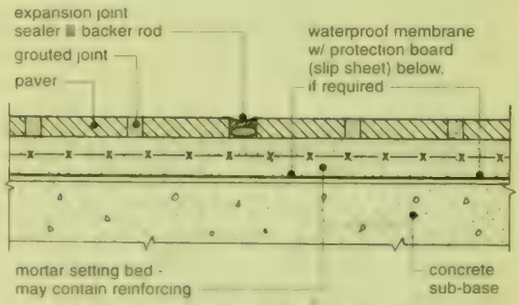
Detail for the intended purpose

Too often, designers fail to understand the function of details. For example, waterproofing details should address moisture infiltration and flow paths: What penetrates into the system must also be able to leave it—rapidly. In one case, a plaza in Illinois developed freeze/thaw problems—deterioration of the paver edges and cracks—because the intakes of the weep holes were placed higher than the lower drainage surface: water ponded instead of draining. The weep tubes installed to deliver water across planter walls were too narrow in diameter to drain the area without gravity to promote water flow. Similar problems develop where area drains are too small to release water that penetrates the plaza paving.

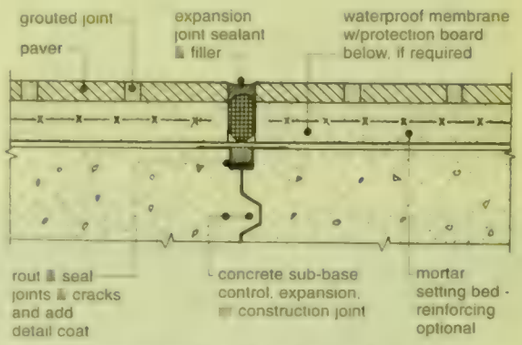
[illegible] is senior consulting engineer [illegible] Research [illegible] William F [illegible] Wiss, [illegible]

Expansion and contraction joints are needed throughout all but the smallest plazas, and the type and spacing of these joints will depend on the system. Some manufacturers of mortar setting-bed materials now call for joints at about 15 ft spacings. The authors believe 10 to 12 ft spacings are more desirable. Inadequate expansion joints can lead to localized distress and deterioration. For example:

• *Unbonded systems.* Like those utilizing protected waterproofing membranes (top detail), unbonded systems will have problems when expansion joints in the traffic surface



POOR PERFORMANCE EXPANSION JOINT



RECOMMENDED EXPANSION JOINT DETAIL

do not continue into the mortar bed. This joint detail has a weak line where cracking may be controlled; however, the mortar bed may still crack in other locations that will not coincide with the joints. The bottom detail shows an expansion joint with a better performance record. Volume changes of both the mortar bed and the paver units are accommodated at one location because of the complete vertical separation.

• *Filler and sealant materials.* In expansion joints, these must accommodate linear movements across the joints. In a large office-tower plaza, the expansion joints utilized flexible urethane sealant, but the hidden filler was rigid PVC strips. Tiles buckled and debonded along the expansion joints throughout the plaza.

• *Bonded systems.* Here, expansion joints in the plaza must line up with expansion-control and construction joints in the substrate, and the substrate must have an adequate number and spacing of both types of joints.

• *Edging elements.* Fixed edges are typically required around brick/sand plazas on grade to inhibit outward movement of the pavers.

Large units with grouted joints

Large pavers, typically stone and concrete units in the 4-ft range, cannot easily accommodate thermally induced volume changes across grouted joints. Since the grout material and its bond to the pavers are typically the weakest horizontal links in the system, separations (cracks) develop along the joints. Typically, these separations are hairline (0.003 in.) or less in width—but enough to let water seep in.

Moisture penetration due to thermal movement can be avoided by providing sufficient expansion joints, or all joints can be made to be "soft" (sealant) joints. Also, installation can be performed in the coolest possible weather, when joints are widest. Sealant will compress as temperatures rise and not shrink when the weather cools.

Masonry mortar

A downtown brick mall suffered "blow-ups" throughout its exterior plaza as the brick pavers and setting mortar popped up off the mortar subbase like small arched bridges. The mortar in the brick-paver joints had expanded, due to freezing and thawing, extruding the material and creating brick-to-brick contact.

The mortar in this plaza was specified to be type M mortar, like that used in masonry walls. Type M, the highest-strength mortar specified in ASTM C-270, has a minimum average strength requirement of 2500 psi. This mortar is adequate for walls because water runs off and the limited amount of absorbed moisture quickly evaporates, reducing the impact of freeze/thaw cycling.

Care in the selection, specification, and detailing of exterior plaza-deck components, especially pavers and bedding and setting materials, will greatly improve long-term performance.

However, when the same (or lower quality) mortar is used in joints of horizontal masonry surfaces, it fails after a few freeze/thaw cycles. This is because water on the surface does not drain off quickly (compared to vertical surfaces) and, in most cases, de-icing salts are used. More durable mortar is needed under these conditions. The usual requirement for the mortar fraction of concrete under freeze/thaw conditions and where de-icing chemicals will be used is a compressive strength of 4000 psi or higher. And an adequate air-entrainment agent is necessary. The BIA discusses the use of masonry mortars, but we recommend they be used only in a plaza with a pronounced slope, and where de-icers won't be needed.

Dry mixture of cement and sand

Another outdoor pedestrian mall, though constructed with large, "high-strength" concrete pavers in combination with granite flags for crosswalk and sidewalk areas, failed due to freeze/thaw heaving of the mortar bed. Damage first occurred in the crosswalk, where the concrete pavers started to tip and butt together. Eventually, the granite pavers of the sidewalks followed suit.

The specifications had called for a setting-bed material consisting of a dry mixture of one part cement to three parts sand, which was to be screeded but left untamped. The pavers were to be placed and tamped, followed by sweeping of the same cement-sand mixture into the joints. During its short service life, the bedding and joint mortar became wet and some of the cement hydrated. However, since the mixture was not compacted as a premixed mortar would have been, did not contain entrained air, and used low-strength (1000 psi) cement, the mortar bed was extremely susceptible to freeze/thaw damage which, in turn, resulted in expansion and loss of support to the pavers.

The BIA discusses these dry-mix mortars, but the authors caution against their use where conditions will include freezing weather and de-icing salts. Subsequent testing of the concrete pavers themselves showed that they also would eventually fail due to de-icer scaling and freeze/thaw cycling: they lacked entrained air, which had not been specified.

Loss of support

Easily recognized by visual and elevation surveys, problems in the plaza substrate are typically due to poorly compacted subgrade soils, usually a construction problem, or heavier than anticipated traffic loading, a design problem. However, other subsurface features occasionally have been found to cause similar problems.

Thick sand beds, in the order of 3 to 6 inches, are notoriously troublesome with brick-size pavers, particularly when the joints are not well filled. Current design thinking for these systems calls for a thin sand bed, approximately 1/2- to 1-in. deep. And, when used over a gravel sub-base, a membrane should be specified to avoid sand migration into the large gravel voids below.

Construction deficiencies

• *Slope and drainage of a brick-sand plaza.* A supported brick-and-sand plaza surrounding a major sports stadium failed due to uneven surfaces, efflorescence, and mold and moss formation. The cause: poor drainage. Instead of a free-draining and gap-graded sand, the plaza was set in normal concrete sand. Concrete sands drain poorly because their gradation is intended to minimize voids (which must be filled with cement paste). In addition, the distances to area drains were as much as 30 feet, with slopes of only 1 percent (1/8 in. per ft). All of the plaza's problems stemmed from these tortuous drainage conditions, which trapped infiltrated water for long periods of time. The NCMA, in Tek 115, discusses the use of "well graded" sands, but the authors recommend a gap-graded or very coarse sand instead.

Several methods can achieve well-drained sand systems. To cure the problem plaza, the original concrete pavers were reset in a new bed of gap-graded sand. In addition, the horizontal flow of water was enhanced by geotextile filters placed both above and below insulation board (in this case, load-rated, dimensionally stable expanded polystyrene). Thus, water entering the paver joints must pass through only 1/2 inch of sand before reaching the top geotextile filter. Any water penetrating the butt joints in the insulation board is removed by the lower geotextile filter. During downpours, this system is expected to fill with water, but it will drain quickly when the rain stops. A similar system, but without insulation, was designed for the repair of the sidewalks and crosswalks of the downtown mall cited above.

• *Bonded setting beds and grouted joints.* A large plaza experienced overall failure of bonded stone pavers due to freeze/thaw cycling. The mortar bed and grouted joints had not been completely filled, creating voids below the stones and in the grouted joints that allowed moisture to penetrate the system. After a few freeze/thaw cycles, the entrapped water froze and expanded, loosening the stones. The requirements of bonded and grouted systems should include fully grouted joints and solid bedding (no compaction voids). Note that the no-void approach can be a problem with large pavers: it takes more care to assure full mortar bedding and complete grout contact with a bigger, heavier unit.

• *Waterproofing membranes.* Most of the problems associated with membrane systems develop at their edges and at penetrations. While a full treatment of this subject is beyond the scope of this article, termination details are difficult to install, require thorough design, and should not be left to the interpretation of the contractor.

Steps

Steps are notorious for their poor performance. Typical substrates are concrete or masonry block, overlaid with a mortar bed on which the step pavers are installed. Stair problems are often due to these factors: Steps usually represent a change or interface between two systems; therefore, expansion joints are typically needed. The steps and their subgrades require individual design and details. A concrete plaza was built with control joints at 4-ft centers, and expansion joints at 20-ft spacings, but its brick steps had no expansion joints: the steps failed.

The dimensions and slopes of some substrates may not be buildable to within the accuracy required of the finished steps. To compensate, the substrate is built intentionally low, and thick mortar beds are used. In one case, this was taken to an extreme, resulting in excessively thick sections of mortar bed, most of which performed poorly.

Continued on page 40

Loose Ends Left at A/E/C Systems '94

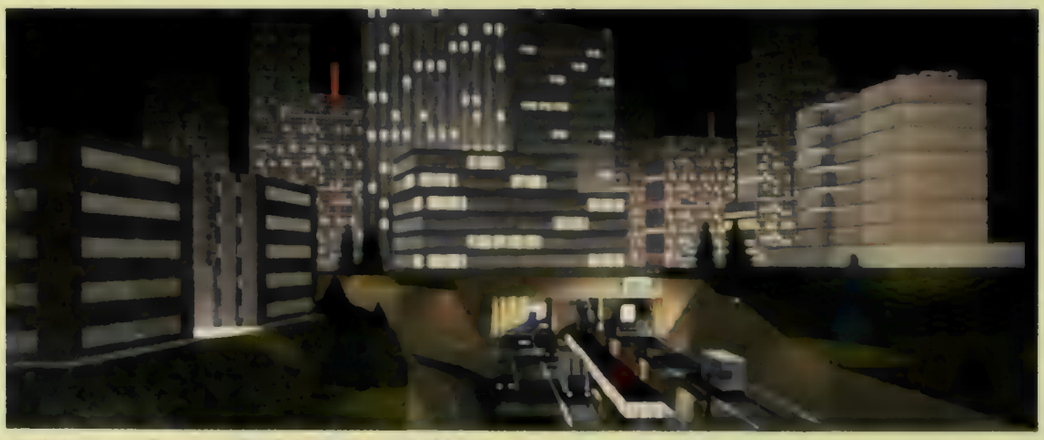
Among news at this year's show was AutoCAD's impending Release 13, which may cause "two years of confusion on standards."

By Steven S. Ross

Software, not hardware, provided the big news at this year's A/E/C Systems show. Prominent in the booths was software to keep better track of huge drawing files and vast amounts of associated data scattered across networks. There were also many new packages for 3D rendering, and new low-priced but feature-laden CAD packages. On the hardware side, prices for large output devices, particularly color inkjets, continued to fall.

The news was not all good, however. Advances of the next six months could make CAD software files less portable—and start a new cycle of vendors jockeying for proprietary positions in the CAD marketplace.

What's going on? In recent years, the structures of CAD software files have been getting more standardized, allowing more reliable data exchange from one CAD program to another, and between CAD and modeling, rendering, construction and facilities management software.



Softdesk rendering of "Urban Night" CAD image.

This has brought ever-increasing success in matching new software tools to architects' drawing style and project type. Rendering and modeling, in particular, depend on mixing and matching software. Some packages are suited for [illegible] rough models [illegible] are strongest for [illegible] rendering. [illegible] for [illegible] models [illegible] [illegible], or [illegible].

Inexpensive CAD software has also emerged, compatible with industry standards such as the AutoCAD DWG file format. Why pay Autodesk's $3,750 per seat price when some seats can be set up with $500 CAD from Xitron or Numera or Autodesk itself?

Again, however, all of this depends on file standardization—or at least compatibility. Although compatibility has been getting better, this may not be the case in the next few years. CAD files are made up of graphical entities—primitive shapes such as arcs and lines. Different packages such as AutoCAD and MicroStation use similar but different entities.

DWG files created by AutoCAD 12, for instance, have 26 entities. Autodesk itself is adding 22 more for Release 13, scheduled for this fall at the earliest. Under the circumstances, it is amazing that there are so many translators that work, or almost work. Vendors who sell translation programs, for instance, already complain about such user defined entities as custom line types in Intergraph MicroStation CAD software.

For AutoCAD Release 13, Autodesk is going further, however. It is allowing third-party developers to add entities of their own to DWG files created by AutoCAD. In programmer-speak, Autodesk provides an API (applications programming interface) for third-party vendors to do this. There are 2,000 such vendors, Autodesk says, with over 4,000 add-on products.

This is an important advance, in many ways very exciting. A window vendor, for instance, may create an automated catalog with window entities that cut their own holes in the wall—and sense and warn about which wall materials may be incompatible. A third-party AutoCAD add-on program could add a pipeline or duct entity that behaves like the real thing in many of its calculated properties.

But what happens when AutoCAD reads a DWG file created with the help of such a third-party application, but with the application not present? Experts attending A/E/C revealed an impending anarchy. Technical people close to Autodesk predicted "two years of confusion" on standards.

Autodesk says the entity will appear, but may not be editable. Developers say, in fact, that under such circumstances the entities may only appear as notation boxes or crude approximations . They may or may not translate into groups or polylines even in the export format DXF—it will depend on the third-party developer and its own marketing agenda.

If unadorned AutoCAD handles such files this way, what about competing products, or add-on products for doing 3D? Asked to comment in detail, Autodesk spokesman Andrew Mackles described the situation as "a process in creation, central to our overall strategy of interoperability. The issues are complicated, and there have been some missteps. But long-term, our goal is to get it right—plug and play interoperability. There are several ways to do this; they will come out in phases—over the next few months from Autodesk and third-party vendors."

Mackles described the situation as mainly up to the third-party vendors, who supply solutions for specific applications, and not Autodesk, creator of the "engine." At the very least, it may be wise for architects to demand that vendors of any third-party add-on product provide enough information about their file structure for files to be reconstructed if the vendor ceases operation. Mackles said there are no plans for Autodesk to set up a third-party registry for entities. "We should not need it. Plug and play is the aim, over the

1. The Apple booth had plenty to show, including the new PowerMac and a NovaJet plotter.
2. Cad Overlay ESP from Softdesk, showing contours being traced.
3. Project Architect showing plan, elevation, and 3D rendered elevation.
4. Softdesk AutoFM facilities management software.

onger term," he said.

Product vendors—for things like windows or loors or pumps or whatever—will have a ested interest in opening their standards. Some entities will be scoped out by emerging new technology such as Jacobus JSpace described below). But some flavors of DWG les will be unusable with our current or xpected tools.

oftdesk emerged as the largest vendor of utoCAD add-ons—and as a company that uld tackle standardization itself. After aising about $15 million in a public stock ffering early in the year, Softdesk has gone n a buying spree. Among its acquisitions:

Image Systems Technology, the largest rovider of scanning and manipulation softare for handling raster images inside utoCAD. *Circle* **300**

IntelliCADD, the main provider of utodesk's "Anaheim" data-handling techlogy (AutoCAD ADE).*Circle* **301**

Worldwide distribution rights for AutoFM, cilities management software. *rcle* **302**

though the Power Macintosh was released ly a few months before the show, many ndors showed software rewritten especialfor it, or promised PowerMac versions by mmer's end. That's hardly surprising; the wer Macintosh offers a three- to 10-fold eed advantage over previous Macintosh dels. Among the new software:

rchiCAD 4.5 modeling and drafting by aphisoft. *rcle* **303**

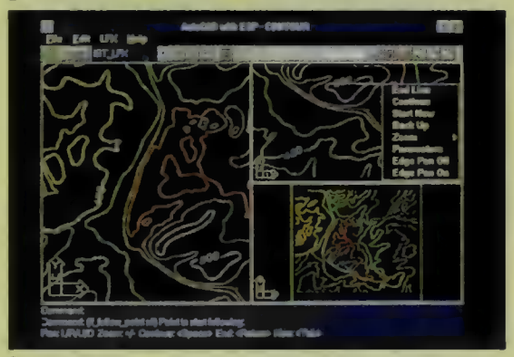
rm-z boolean modeling by auto-des-sys. *rcle* **304**

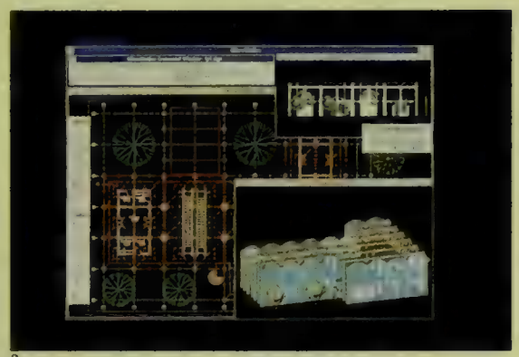
raphsoft showed MiniCad 5, a Power cintosh 2D and 3D CAD package with ong database and spreadsheet links. It ludes conversion from Claris CAD files. *cle* **305**

esignWorkshop by Artifice. *cle* **306**



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▪Designreality, 3D modeling from Ashlar; the 68030-Macintosh version, originally developed by YONOWAT in France, was shown at the show. A PowerMac version is due in September; the upgrade cost will be only for shipping and handling.
Circle **307**

•Vellum for the Power Macintosh, also from Ashlar; owners of Vellum 2.5 for the 68K Macintosh can upgrade free.
Circle **308**

In contrast, there is still no CAD package written specifically for IBM's OS/2, which has been available in a usable form (with high-resolution graphics drivers) for a year.

Bentley Systems and Intergraph provided more details about the arrangement between them. Bentley is developer of MicroStation, which Intergraph has been selling. Now Bentley (half owned by Intergraph) will take over more of the marketing. Intergraph will probably remain the largest single marketer of MicroStation, however, packaging it with many third-party add-ons and many add-ons of its own. The new arrangement is being phased in this year.

Jacobus Technology, which develops software that works with both AutoCAD and MicroStation, announced a "strategic alliance" with Bentley to develop projects based on its JSpace, a way to link non-CAD data with drawings. JSpace Vantage, for instance, is meant mainly for plant facility reviews. JSpace Vista can evaluate different 3D designs for optimal performance.
Circle **309**

Intergraph showed its relatively inexpensive ANA Tech Eagle 3640 24-bit color scanner.

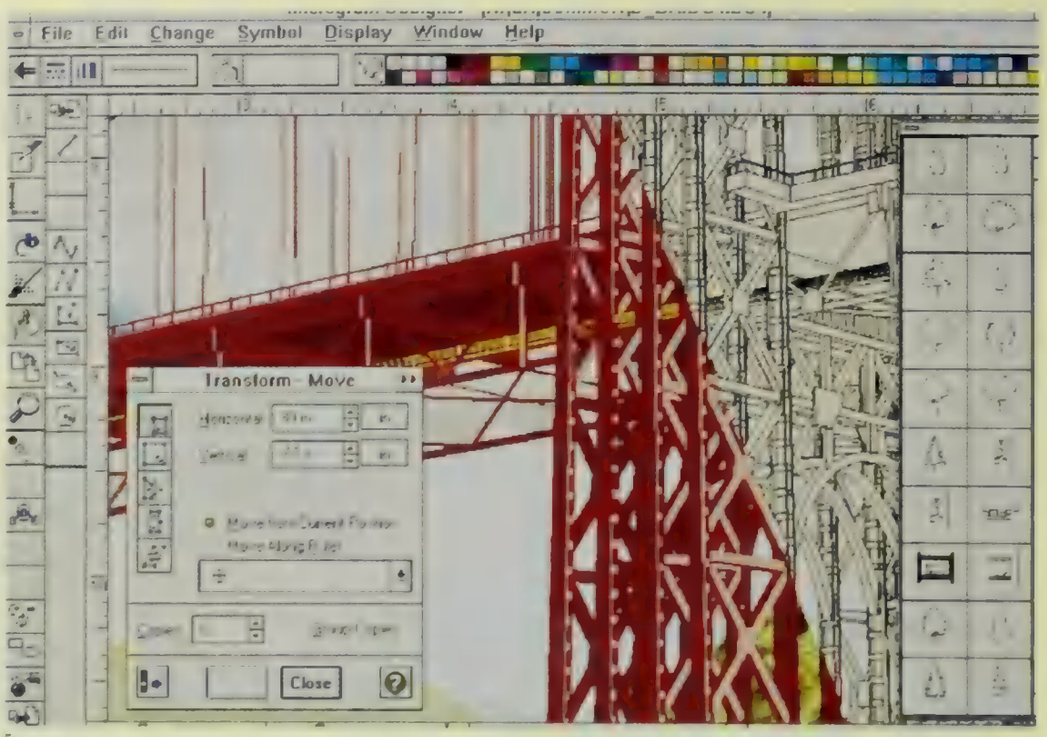
Intergraph also showed numerous new add-ons including Project Architect for Windows NT, a package for construction documentation, Intergraph FM for facilities management, and Project Layout for Windows NT. *Circle* **310**

Bentley showed a pen-computing drawing markup package that can be taken into the field — MicroStation Field; it is perhaps one of the best pen computing applications yet. *Circle* **311**

$500 bargain CAD

A whole new class of super-capable CAD costing $500 or less was trumpeted at the

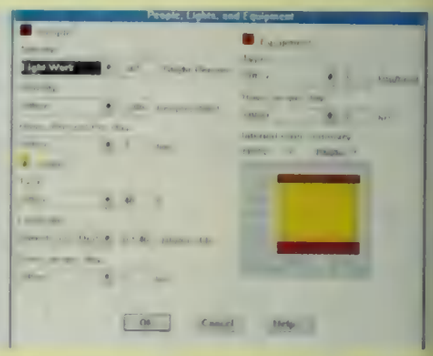
5. MicroGrafx Designer 4.1 TE makes it easy to manipulate CAD drawings.
6. Viewbase from Softdesk file management software.
7. Softdesk version of DOE energy consumption modeling.



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show by numerous vendors. Some of the new packages will require careful evaluation, to see if they can handle really big projects—10,000 entities or so. But the features and interfaces looked terrific on the floor. Among the packages:

Ashlar offered Vellum 2D, a $2,495 package for Windows and the Mac, to Generic CADD users for $495. File transfer between the two is only possible via DXF, however.
Circle **312**

Cadkey, Inc., introduced CADkey 7 at $495. After September 15, the price is scheduled to go to $3,495—but recent history suggests that if sales are brisk, the firm may stay with the lower price. DataCAD 5, also from Cadkey, is $149.95.
Circle **313**

Numera, a new company created by former programmers of Generic CADD, demonstrated Visual CADD for Windows, a 2D package that loads and saves all Generic CADD drawings as well as AutoCAD DXF drawings with the standard customizable command. Obviously, users of the package to recognize GenCADD two-letter commands. The price is $495 .
Circle **314**

Softsource, a major provider of engines for DWG and DXF translation to and from other CAD formats, said its $500-range Sausalito CAD package, using AutoCAD file entities for exact translation, would not appear before fourth quarter 1994. It had been announced last fall.

Xitron, another new company, showed XCAD for Windows and Windows XT on a super-fast Digital Alpha AXP running NT. Its surface modeling tools were particularly impressive, but the final product was not quite ready for the show.
Circle **315**

Two providers of "drawing" programs introduced software designed to take CAD files and turn them into artful presentation pieces—much more easily than you could with the CAD program itself.

Micrografx showed Designer 4.1 Technical Edition—similar to Designer 4.0, but with a good set of import and export filters including DXF and IGES. Designer 4.1 TE does lack many of the 3D features of Designer 4.(however.
Circle **316**

Caligari showed a true 3D drawing program trueSpace; its translators do not seem as complete as those for MicroGrafx, but special effects and the ability to fly through model will make up for it, if your files can be handled.
Circle **317**

Synthonics Incorporated showed 3DMaker, package that can turn a standard 3D CAD drawing into a 3D image (for viewing through glasses with different tints in each eye). The company had previously released 3DeXpres for generating 3D wireframes an DXF data files from pairs of ordinary scanned images or 35 mm slides.
Circle **318**

IBM concentrated on displaying its Catia and CADAM software for plant design; the was only a small booth for A&ES, the full-blown architectural CAD software originall developed with Skidmore. Owings & Merril Nevertheless, it was showing a fine facilitie planning add-on. *Circle* **319**

Accounting and project planning

The big news was Windows. Many of the new packages run under Windows, allowing easier data exchange and easier data input. This makes them more compatible with architectural offices.

Tracking consultant and reimbursable expenses is easier with ACCI's Project Management/Accounting System. Version 10.1 was shown at A/E/C. It prompts for consultant invoice payment when you enter receipts. *Circle* **320**

Building Systems Design, Inc., showed The Composer, a package for tracking costs of past projects, applying inflation indices, and special area-specific cost factors. There's a scheduling module as well that imports and formats ComposerR data; this module can send the data on to other scheduling and project management packages. *Circle* **321**

Design Cost & Data's Design4/COST version for Windows calculates per-square-foot construction costs based on historical prices. *Circle* **322**

Design Data Systems announced a Windows version of its project management software; it had not shipped by show time. It allows good integration with financial functions, including invoicing, budgeting, job costing, and resource planning. *Circle* **323**

Indl Data Products showed AFMAN II for Windows, a cost estimating package aimed at the building renovation and facility management markets. There were already DOS and Sun Solaris versions. *Circle* **324**

Research Engineers, Inc., showed AutoProject 2.0, a full-scale project management link that runs on top of AutoCAD. In addition, the firm's CadPlus, tuned specifically for architects, prepares 3D models, elevations, and sections along with complete construction documentation. It sends data easily to AutoProject. *Circle* **325**

Sma4 for Windows, from Semaphore links financial management data to FoxPro 2.5 for Windows. The reporting tools are quite flexible. *Circle* **326**

Timberline Software showed TimeTrax, a spreadsheet-like timesheet for Windows or OS/2; its ASCII files can be sent to scheduling, forecasting, or accounting programs. *Circle* **327**

CAD and modeling tools

Except for the booths displaying scanners, printers, and plotters, this year's A/E/C Systems was almost entirely software, not hardware. Numerous new CAD packages and add-ons for existing packages led the way. Autodesk itself offered an architectural package—AutoCAD, rendering, modeling, and so forth—at discount. *Circle* **328**

ART, Inc., announced Release 3.0 of its Chief Architect, a 3D modeling package for Windows, optimized for drawing interiors. The new version adds semi-automatic drawing of complex roofs, exterior elevations, and cross sections. The product was shown, but was not yet shipping. *Circle* **329**

BAGH Technologies showed STAR ARCHI, a CAD system tuned for high-end projects. It includes modules for 2D and 3D drawing, terrain modeling, facilities management, and rendering. *Circle* **330**

CADworks, Inc., showed Drawbase Release 2.0, a 3D CAD package being positioned as much as a facilities-manager as a CAD tool. It has excellent database "hooks" to query and report facilities data. The 3D images and text can be displayed by floor, building, activity group, and so forth. The 3D display essentially acts as a front end to external databases — even multiple databases — under Windows. *Circle* **331**

CADworks also sells Visual Drawbase, for generating photorealistic 3D images from Drawbase 3D models. Use it to attach textures, light sources, and surface characteristics (transparency, reflectivity, and so forth). *Circle* **332**

Dacis, for MicroStation, showed its Builder System, with numerous tracking and cost-control modules. *Circle* **333**

Eagle Point showed several new add-on programs for AutoCAD including landscape preparation. It also announced support of Hewlett-Packard's UNIX computers with MicroStation. Most of the packages are meant for site work. *Circle* **334**

Eclipse Software demonstrated Facade 2.5, a 3D modeler that runs on top of AutoCAD Release 12. *Circle* **335**

Expert Graphics showed Kadet-LT, an architectural add-on for AutoCAD LT. It handles layers, dimensioning, and symbols. *Circle* **336**

Graphisoft showed Atlantis Render, which it is marketing in the United States. It works directly with ArchiCAD. It also showed ArchiCAD 4.16 with faster rendering under Windows. The upgrade from 4.1 is free. *Circle* **337**

KETIV showed an upgrade to its Archt architectural software for AutoCAD 12. It has better reporting requirements and more flexibility for standard features such as doors and windows, and for multistory designs. *Circle* **338**

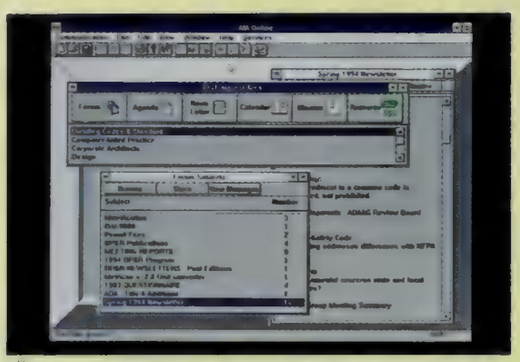
LandCADD International, well-known for its AutoCAD add-ons, introduced a stand-alone program, Site Designer, for the site planning and landscape architecture market. Functions include estimating, irrigation, and basic COGO functions. *Circle* **339**

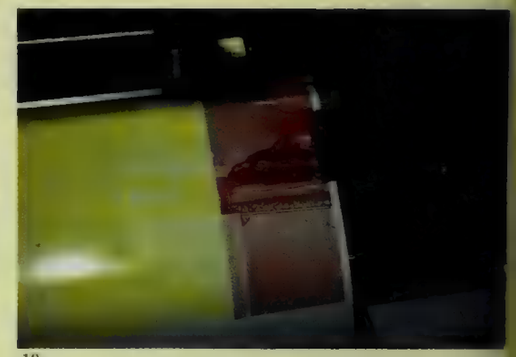
Lightscape Technologies showed fast 3D lighting visualization software for Silicon Graphics workstations. *Circle* **340**

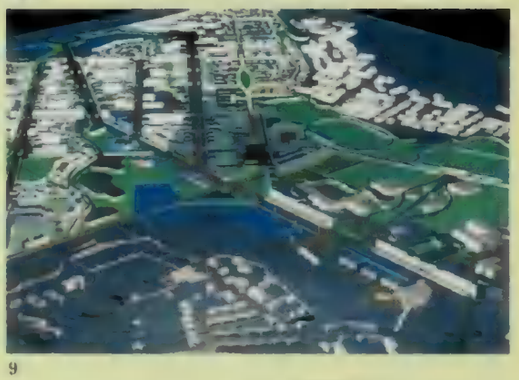
People for People showed a new collection of 3D people for use in Autodesk 3D Studio renderings. *Circle* **341**

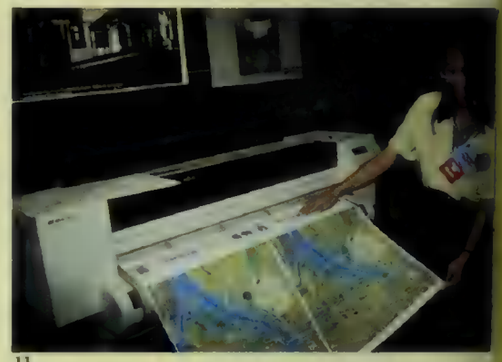
Reflex Systems showed a new modeler for Silicon Graphics computers. The main feature, engineering analysis within the model, will be of particular interest to multidisciplinary firms. *Circle* **342**

8. AIA OnLine offers members a package of on-line services, including e-mail.
9. BAGH's STAR ARCHI integrates .2D/3D modeling and terrain like the city shown. .
10. Summagraphics color band printer laying down magenta over yellow; narrow printhead keeps cost down.
11. HP 650C color inkjet plotter with maps.
12. Photorealistic rendering of an antique steam engine using Selex printer.


8


10


9


11

RenderStar Technology showed RenderStar 2 eXtension-24, a stand-alone rendering product for DXF and many other file formats, including AutoCAD, DataCAD (if the drawing has no voids), DesignCAD, CADkey, and others. ARE-24, working inside AutoCAD R12, is also available; it was developed with KETIV.
Circle **343**

CyberScope for either AutoCAD or 3D Studio, from Simsalabim Systems, allows modeling and stereoscopic viewing of files that start as DWG or DXF.
Circle **344**

Softdesk, a year after its takeover of ASG, showed French, Spanish, Portuguese, and Italian versions of Auto-Architect. A German version of this AutoCAD add-on is due soon. A version combining the best features of ASG and Softdesk is due when Autodesk issues Release 13 of AutoCAD.
Circle **345**

Spotlight Graphics, Inc., showed its Ray Tracer for MicroStation, version 1.6. The new version is amazingly fast—its Quick Display option for ray-traced views displays images five to eight times faster than previous versions.
Circle **346**

Triangle Company showed NovaFill-V for complex edge-to-edge color or grayscale fills inside AutoCAD and plot them on XES/Versatec electrostatic plotters. NovaFill 2.5 does the same for inkjets supporting HPGL/2.
Circle **347**

Facilities management
The trend toward blurring the distinction between construction drawings and tenant records continued, with numerous improvements to facilities management packages.

Archibus/FM-FTMS for Windows makes it easy to create [illegible] presentations. It allows links between CAD images, database info[illegible] and even textual messages. Changes [illegible] screen [illegible] information they

BAGH Technologies showed Star Techno, a facilities management package that combines 2D and 3D graphics, scanned images, and database text. It can be linked with Oracle and other database packages.
Circle **349**

File conversion
The job may be getting more difficult, but that hasn't kept many vendors from offering new tools for file conversion. In particular, raster-to-vector, AutoCAD DWG, and Intergraph IGES users are benefiting.

ComNet showed its new Windows 3.1 raster-to-vector scanning package with optical-character recognition for text, VPmaxNT. *Circle* **350**

Decision Graphics (DGI) released CATS 4, an AutoCAD/Intergraph translator for 2D and 3D files. It handles DWG, IGES, and DXF conversions in either direction, and features powerful customization facilities.
Circle **351**

GTX showed GTXRaster CAD and RasterCAD Pro for Windows, with great interfaces and excellent AutoCAD compatibility.
Circle **352**

Ideal showed I/Vector, new raster-to-vector conversion software for Windows 3.1, Windows NT, and DOS.
Circle **353**

Image Memory Systems showed CsWinNT, software for scanning old drawings and converting them to CAD format, for high-volun applications.
Circle **354**

Image Systems showed CAD Overlay ESP 4X, adding three new features to this pioneering package—better raster editing tool rubber-sheeting to match the raster images to CAD drawings, and plotting of color vect and monochrome raster together.
Circle **355**

Kandu showed its new CADMOVER 4 tran lation software with new modules for 23 CA and graphics Macintosh-based translations. *Circle* **356**

Tailor Made Software sidesteps file incompatibilities by converting HP-GL and HP-GL/2 files to MicroStation DGN format Its new HP2Design package runs inside Version 5. *Circle* **357**

13. Artist Graphics 3D fly through utility, showing icon palette in lower right, rendered view in upper right, wireframe underneath. AutoCAD image.





endors are catching up with the ability of AD software to scatter files all over a twork. New file tracking and viewing ckages can view main files as well as refer- ce files, track revisions, and even allow arkups and comments on segregated vers where they don't affect the drawing elf.

mmetry Systems introduced AutoVue and toVue Professional, version 12.2 for wing, markup, file conversion, printing d plotting. AutoVue supports more than graphics, text, and data file formats. Ver- ns are available for DOS, Windows, and ix. *Circle* **358**

CO International showed AutoManager ganizer, for tracking and viewing toCAD drawings on stand-alone or work systems. It works with AutoCAD S or Windows versions. The packaging is noteworthy as the software — a compact , only 1.5 inches high and about 4 inches are, it contains two disks, a warranty d, and a 60-page manual. *Circle* **359**

se Control from Kruse, Inc., is a high- me package for organizing, viewing, and ting drawings. It runs under Windows, showing amazing power for a seemingly simple interface. *Circle* **360**

MicroGreen's CECAD turns AutoCAD 3D models into images that can be viewed in "stereo" for true depth perception. *Circle* **361**

Salix offered a toolkit for vendors and large companies to handle almost any graphical or data file on Sun systems. Out of the box, it offers impressive functionality, and possibilities for customizing. *Circle* **362**

Silanis Technology showed ERA for Windows, a document revision and tracking package that runs with AutoCAD 12 for Windows and allows electronic signoff of revisions. *Circle* **363**

File tracking and viewing

Systems personnel at larger offices will particularly appreciate tools from Sirlin Corporation. The Profession version of its CAD++ Engine toolkits support display lists and rendering engines such as HOOPS, and the display of AutoCAD DWG and DXF files. For less sophisticated offices, SirlinView 3.0 for Windows (with more speed than previous versions) handles CAD and raster image viewing, and redlining.

SirlinView/PLUS 3.0 for Windows includes query software that searches structures within files. *Circle* **364**

Synergis Technologies, Inc., showed its Network Filemanager for Windows and Sun workstations. It includes file viewing, redlining, revision control, plotting, and a flexible underlying database. *Circle* **365**

TSA/Advet showed its new Falcon/DMS Windows-interface document management package for AutoCAD, MicroStation and other Windows CAD software. *Circle* **366**

On-line services

AIA Online offers business development leads, building product sources, AIA services, e-mail and architect-run forums. AIA members pay phone charges only, no connect fee. *Circle* **367**

The American Society of Landscape Architects introduced DesigNet, a free system for information exchange and electronic messages. *Circle* **368**

Output devices and software

Photorealistic rendering has stimulated the production of photorealistic output—and you no longer need a slide maker to get it. Inkjet and dye sublimation vendors offer shiny coated paper. The results are astounding. The only trap is that each vendor's paper has been matched to its ink; seemingly identical stock will give poor results in incompatible printers and plotters.

CalComp continued to ratchet down prices for electrostatic plotters. Its DrawingMaster 600 and 800 units have higher resolutions (300 by 600 and 400 by 800 dpi respectively), too. These are the first E-size direct-image plotters with resolutions so high. *Circle* **369**

Eclipse Software demonstrated Plump 3.1, a new family of print spoolers for DOS and Windows; it features improved network support. *Circle* **370**

EnCAD's NovaJet II found some new tricks. Its super-glossy paper provides photo-feel output, amazing for an inkjet. The paper is designed to work with the ink; no other vendor at the show could match the combination, although many promised to do so by year-end. *Circle* **371**

Hewlett-Packard showed the Enhanced DesignJet 650C inkjet printer, with more memory and better connectivity. *Circle* **372**

Insight Development Corporation's PrintA-Plot Pro turns any printer into a color HPGL/2 plotter. It pops up inside any CAD program, or attaches to AutoCAD via ADI. Its RenderPrint software prints photorealistic 3D images on any printer or HP DesignJet plotter. *Circle* **373**

Mutoh introduced a new line of D-size high volume plain-paper plotters, the LD-2000 series, using LED direct-imaging technology for 400 dpi resolution. They can hold two different media rolls and can handle a wide variety of plotter formats. Prices range from under $20,000 to $29,000. *Circle* **374**

Continued on page 97



200. Cement decking

Flat building sheets, profiled panels, and corrugated cladding form the SupraCem line, which is said to be the only replacement product for asbestos-reinforced cement sheets with similar corrosion- and fire resistance. Supra-Deck profiled decking (shown) is said to offer excellent span and load capacity for low-slope and flat roof-deck applications. Cemfort, Inc., Montreal.



201. Stylish stones

Combining graded stones and colored cementitious base creates a multi-hued, fractured-stone surface when exposed by sandblasting. Lithotex Colorstone is appropriate for new interior floors or fresh cement and is said to resist wear and abrasions. Available in 16 standard colors or custom combinations. L.M. Scofield Company, Los Angeles.



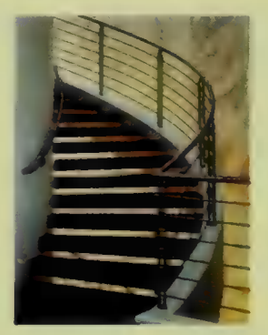
202. Color option for metal

A deep forest green joins this company's list of 23 available colors for painted steel and aluminum panel, roofing, and column-cover systems. Hartford Green comes in 24- and 26-gauge steel and in .032-, .040-, and .050-gauge aluminum. Complementing copper and stainless-steel metal products also are available in various finishes and colors. Copper Sales, Inc., Minneapolis.



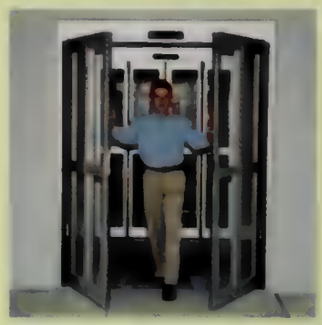
203. Anti-stain latex paint

A new interior latex wall paint claims to have the same washable and durable qualities as glossy enamel wall finishes. The stain-resistant Everclean finish is offered in flat and satin in over 600 colors. Unlike regular flat paints that absorb stains, this is designed to dry with a non-porous film that prevents such absorbtion. The Sherwin Williams Company, Cleveland.



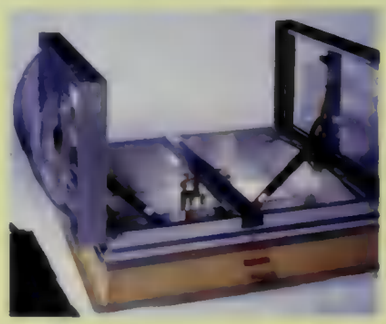
204. Double jointed

The basic element behind this stainless steel railing system is a double baluster. With adjustable handrail segments and standardized components, balustrades adapt to any staircase direction. Panelling choices include lateral or tubular stainless-steel tubing and glass in panels or strips. Fittings are finished in satin, polished, and titanium plate. Partec, Elk Grove Village, Ill.



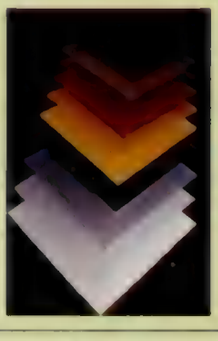
205. Automatic safety

This new automatic bi-folding door allows a manual push to swing it ope during emergencies. Other built-in safety features include a low-energy closing force and a push mechanism that closes the door if it hits an obstruction while opening. Made for small spaces without a lot of room, t fold unit can be installed in already existing doorways. Horton Automatics, Corpus Christi, Tx.



206. Translucent fire vent

This new GDSH series neatly serve a dual purpose as a fire vent and a skylight because of its polycarbonat dome, which is said to be nearly ind structible. Options include smoke detector activation, motorized oper tion, special finishes, custom base flanges for metal-roof installations, and security grilles. FM approved and UL Listed. The Bilco Company New Haven, Conn.



207. Colored glass

Designers are no longer limited to neutral and gray glass tones with Metallica, a new line of colored arc tectural glass. The 20 hues include lighter, semi-transparent samples patterns and graphics and 10 opaq choices for solid surfaces and wall cladding. Each of these can be com bined with patterns and textures from the company's original series Cesar Color, Inc., Burlingame, Ca

Short takes

•The CSI Show: Too big?

June's 38th annual convention and exhibit of the Construction Specifications Institute was, as usual, a trove of new building products, electronic specification help, and technical seminars: but too much of a good thing?

The numbers of exhibitors—well over 700 manufacturers and 1,000 booths, according to management figures—is far too many to browse in the 12 hours of exhibit-viewing time (spread over the three days of the show!) permitted. And the traditional Friday/Saturday/Sunday slotting might discourage attendance by local architects and designers unwilling to sacrifice a weekend. Suggestion: maybe fewer exhibits or more time to see them.

This year's educational workshops had (as usual) a high level of usefulness. Topics went from cutting-edge infrared wireless data exchange, through realistic design and produ selection strategies utilizing non-toxic, recycled materials, to yo are-there demonstrations of a working Alternative Dispute Reso tion session. All in all, well worth t trip. Next year: Minneapolis; June 23-25.

March of time

For its 1995 "Cycle Year", the Sweets catalogs will have an entry Division 10 for time capsules. *J.F.*

VPI® COMPOSITION PLUS™ THE 1ST IN ITS CLASS



UNBEATABLE RESILIENCE

Yes! A composition tile that bends. Composition Plus more closely matches solid vinyl floor tile in flexibility than any of its competitors. This resilient flooring conforms to most irregular subfloors without breaking, crazing or cracking.

UNBELIEVABLE TRANSITIONS

For a seamless appearance, Composition Plus tiles are Micro-Squared™, an exclusive precision cutting that allows tiles to fit together so perfectly, dirt traps are virtually eliminated!

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Designed to last through and through, the attractive pattern extends through the thickness of the tile. Heavy traffic's no threat to the lasting good looks of Composition Plus™.

- An improved surface finish makes the tile less porous, easier to care for and stronger against wear and tear.
- Homogenous composition and even distribution of materials make this vinyl composition tile among the most durable on the market.

Circle 9 on inquiry card

Fundamentals *continued from page 29*

Material performance

Exterior plazas often fail due to poor material performance, particularly concrete plazas in northern climates. The main causes for these failures are moisture and salt penetration into poorly air-entrained mortar and concrete systems followed by freezing and thawing.

•*Freeze/thaw resistance.* Paver units subjected to northern climates should be tested for freeze/thaw durability before being specified. ASTM C-666 should be followed if only water and ice exposure is contemplated, but ASTM C-672 should be followed if de-icers will be used.

•*Bonded and grouted pavers.* Proper materials must be used in bonded paver systems. Bond development can be a chancy item, particularly if pavers are to be bonded to a mortar setting bed. As discussed earlier, durability can readily be imparted to the mortar by providing an adequate air-void system (using an air-entrainment agent) and a compressive strength of at least 4000 psi. However, bond integrity can be affected if too much water is added to the mortar for workability, as bleed water will collect at the mortar-paver interface and leave voids that interfere with bond development. This, in turn, promotes freeze/thaw damage.

This problem can be solved by the addition of a suitable latex in the mortar. "Suitable" means a latex based on acrylic or styrene-butadiene. Polyvinyl acetate should *not* be used in such applications. In addition, the proper latex-to-cement ratio (about 15 percent) should be used, and the mortar pot life maintained at about 30 minutes. Latex will greatly reduce bleeding at equal workability and assists in the development of good bond strengths. The same mortar material can be used to fill joints, which should be wide enough to allow proper filling and striking off (about 3/8-in. wide).

•*Stone pavers.* Laboratory tests, like those specified in ASTM C-97, must be conducted to reveal any excessive porosity and absorption characteristics of the particular natural stone selected.

Maintenance

While maintenance is an important topic that can't be fully treated here, the following opinions are offered because many owners and designers have asked about the issue of responsibility.

•Once the plaza is completed, its maintenance should be the responsibility of the owner. This responsibility includes cleaning and preserving the plaza and maintaining the expansion joints. Beyond that, the plaza should function as designed and constructed.

•To properly maintain an exterior plaza, the owner must be aware of both the chemicals that can be safely used to clean and maintain the plaza and the expected performance of the plaza elements. The owner must also realize that some elements, such as sealant joints, if used, require regular inspection and replacement. Guidance in this area must come both from the designer and from the materials suppliers. ■

Plaza-deck materials and waterproofing systems are featured in this month's Product Literature section.

Power.



5 minute plots

Now, with a new low price, the HP DesignJet 200 monochrome inkjet plotter is more affordable than ever.

It's true. For about the price of the average pen plotter, the HP DesignJet 200 gives you crisp, 300-dpi, D-size plots in under five minutes.

Of course, HP's proven inkjet tech means more than just fast plottin means no more pen-related probl No more skipped lines. No more clogging. And our smooth, quiet

Letters *continued from page 4*

work as a youth when the only books in the architectural section of our library were on his work. So it came as a great shock to a student entering college to discover how ridiculed and outcast were Wright and his ideas. But the damage had been done, and the words from his "Autobiography" and "A Testament," as well as a book written in 1961 by Finis Farr, captured my imagination and faith. Louis Sullivan's *Kindergarten Chats* confirmed that I was on the right road.

Three years later, still holding onto Wright's concepts of space, light, texture, the horizontal and dotted lines of nature, and the continued study of his life, drawings, and work, I came face to face with architecture for the first time.

It a well known, but relatively small university 18 miles from the Auburn campus, my life changed forever. I discovered Paul Rudolph's Interdenominational Chapel at Tuskegee. Everything I had ever read that architecture was supposed to be was there in brick, mortar, and light.

Much of the genius that is Wright is also Rudolph's. The ability to see so clearly the finished building of considerable spatial and structural complexity at the outset of the drawing process is a gift few ever realize. It is no different than Samuel Barber writing his legendary "Adagio For Strings" in twenty minutes on a train in northern Italy. It suddenly appears on paper as a finished work.

The remaining question, as I see it, is when will Paul Rudolph at long last receive his A.I.A. Gold Medal and be recognized once and for all as America's greatest architectural mind since Wright?

Preston Phillips
Bridgehampton, N.Y.

Gehry Center Critiqued

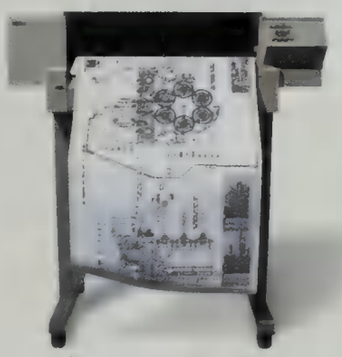
When I look at a publication of a Frank Gehry building, I am moved by two opposite feelings: one of awe, the other akin to pangs of anger and embarrassment. When I look at the American Center [RECORD, MAY 1994, page 86], I am immediately overcome by awe, because it defies traditional understanding of how a building stands up. I am at a loss for issues of gravity and construction. What I see is a grotesque object of unfamiliar assemblage that dislocates me from established norms of reason.

I have worked on many buildings that are infinitely simpler than the one in question. They all embodied enough problems to make any of us want to quit the profession. With this in mind, I reflect on the pictures of the American Center with great admiration and consider them monuments to the human capacity for creativity, resiliency, and diligence.

But after the pictures have become familiar and recede to the back of my mind, I ask myself: Is this the design philosophy we should be promoting in schools and in the profession? In criticizing the American Center, I would like to proceed in the spirit of Thoreau, who prefaced his love for freedom and individuality with primitive notions of economy—economy as a simple departure of acquiring less. In the opening chapter of Walden, Thoreau clearly understood the deception of the capitalist system, which lured people into thinking that the acquisition of property and other materialistic

Continued on page 47

To the people.



$2,995*

n makes the HP DesignJet 200 for any office environment. And he addition of legs, the DesignJet nverts from a desktop to a free- ing plotter.

So get the plotter that saves you as much time as it does money. Call 1-800-851-1170, Ext. 7720 for the location of your local HP demo dealer.†

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*E-size model priced at just $3,995. Suggested U.S. list prices. Price does not include optional legs and bin. Plot images courtesy of Autodesk, Inc. †In Canada, call 1-800-387-3867, Ext. 7720. ©1994 Hewlett-Packard Company PE12402

Circle 10 on inquiry card

EVERY TIME WE'RE INVOLVED IN A PROJECT LIKE THIS, HISTORY ENDS



Marvin Windows and Doors has a history of being able to meet the demands of virtually any project. So when architect Barry Svigals of Svigals Associates was asked to restore this grand, old Victorian, he knew just who to call.

"Marvin provides the best of both worlds," states Barry. "A complete line of standard produc and options plus unmatched custom capabilities." And as Barry soon learned, both disciplines w essential to this project's success.

Contractor Rob Reutenauer and Marvin's representative began by carefully measuring the existing windows; each of which needed to be replaced. And to match the originals, all 20 of them required authentic divided lites.

What's more, when the contractor requested special, extended sill horns, Marvin provided them factory-installed; an accomplishment that added to the authenticity of the windows while reducing the time it took to install them.

The crowning achievement, however, was the home's cupola. This distinctive, Mansard-roofed feature had been totally destroyed by a hurricane in the early 1900s and never faithfully rebuilt. So the architectural team pored over several old photographs of the home and reconstructed the cupola on paper. From those drawings, Marvin crafted four 2'x 5' round



PEATING ITSELF.



double-hungs that are virtually identical to 40 year-old originals.

Today, this waterfront residence on Long d Sound stands as a shining example of a ne era. A testament to the respect shown for the home's original ler. And further proof that no matter how difficult the demands of b, Marvin is ready and willing to meet them.

MAKE US YOUR FIRST CALL, NOT YOUR LAST RESORT.

If you've got a replacement or restoration project you want to ss or a window problem you just can't solve, call the one company now will have the right solution. Call Marvin at **1-800-346-5128** 0-263-6161 in Canada). Or mail the coupon for a free catalog ring our entire line of made-to-order windows and doors.

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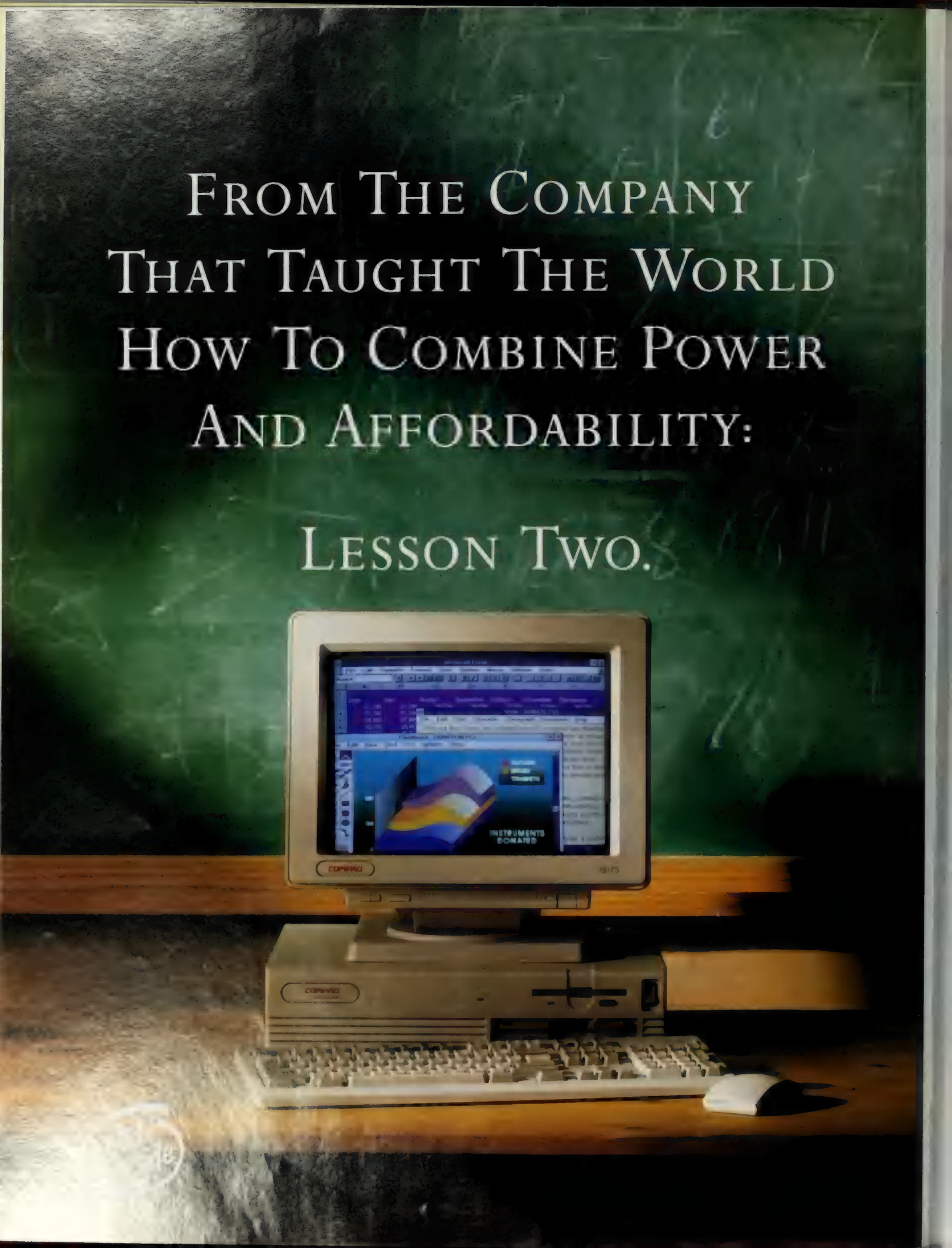
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Letters *continued from page 41*

ommodities were prerequisites to freedom nd individuality. His two years at Walden vere a way to point out that true indepen- lence cannot happen until one has reduced ne's web of commitments to a minimum.

t is through his economy of vision that Thoreau becomes most central to the Ameri- an Center. The issue is not about budgets, or about esthetic value. I am arguing for conomy as a philosophy of design—economy n light of our ability to control the flow of orms and concepts from our imaginations. Could the beauty of the American Center ave been achieved with an approach less chizophrenic than the one adopted, eliminat- ng the effort of calculating stone dimensions anel by panel? Our success as architects is easured by our wisdom to know when to op designing, when to standardize a detail, nd when to compromise.

t this point, someone is liable to ask: "Why ould Gehry edit his forms when his reputa- on was built based on doing exactly the pposite?" or "Don't you think Gehry's archi- cture is a breath of fresh air to all the petitive stuff we are forced to design on an ery day basis?" If we are to give the Amer- an Center and its author the title of "An nerican in Paris," then both should stand ambassadors not only for freedom and dividuality but also for money or lack of it, least within the realm of the profession. ne American Center proceeds in complete difference to the fact that so many archi- cts are compromising their principles just make ends meet. In this sense, Gehry rives in Paris as an escape from America, t unlike Henry James' portrayal of the cocks in The Ambassadors, who went to ris to find their identity, only to realize at what they really enjoyed was everything at was not American. Both Gehry and the cocks have a strong, albeit latent, appetite aristocratic lifestyles and aristocratic ellectual power of persuasion, which are sent in a democracy.

he American Center had been designed in nerica, then the building would have opted a different language, and the "balle- a tutu" would probably have been lowered launt less of its extravagant underside.

ry has reached the level of star status; a l sought-after architect. He has earned a vilege that few architects have achieved, l as such, holds the key to pushing design in creative esthetics, as well as better living. The American Center has a responsibility not only to its immediate surrounding but to the context of the crisis of the times. There was tremendous poetry of economy that Gehry touched on when he first inserted the chain link fence in his house. It was a symbol of struggle and victory simultaneously; an act that has been lost in the rush of reputation and ego, yet one desperately needed back in our approach to design today.

Ayad Rahmani
Spokane, Washington

Calendar *continued from page 4*

• Entries are being accepted for the 1995 Presidential Design Awards. Current and former government employees and nonprofit organizations who have designed for the federal government are eligible. Contact Thomas Grooms at 202/682-5437.

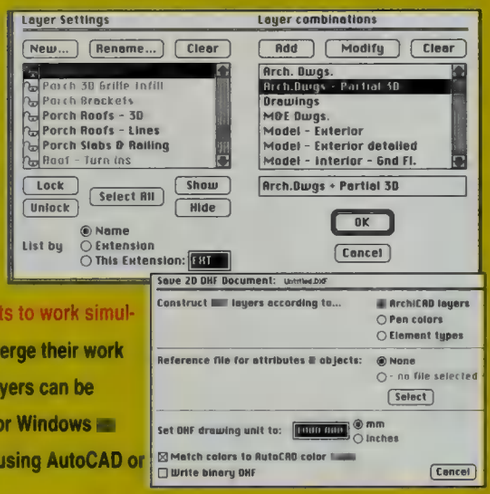
• The American Academy in Rome announces its 99th fellowship competition. Winners receive a stipend, travel funds, room and board, and a study or studio space in Rome. The fellowships range from six months to two years. Call 212/751-7200. ■

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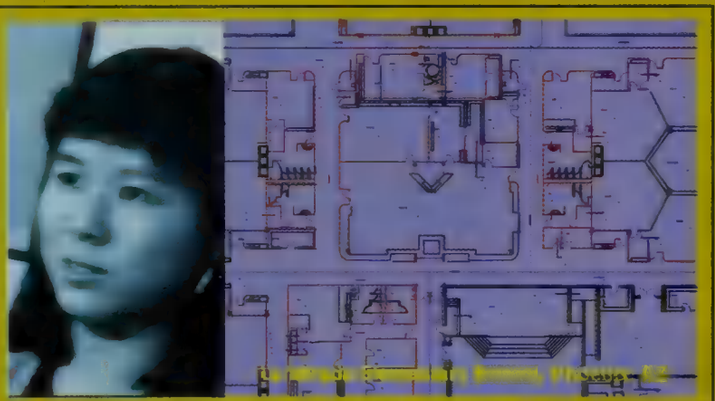
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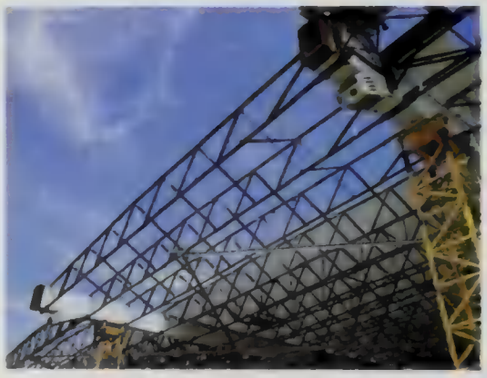
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PO Box [illegible] 602/644-8500; PO Box 1000, St. Joe, IN 46785, 219/337-5411.

Architect: [illegible]; General Contractor: Watson General Contractors, Inc.; Steel Fabricator: [illegible] Construction Co., Inc.

[illegible] Consult Steel Joists Institute Technical Digest No. 9 for information [illegible]



Bartle Hall Convention Center, K

Circle 14 on inquiry card

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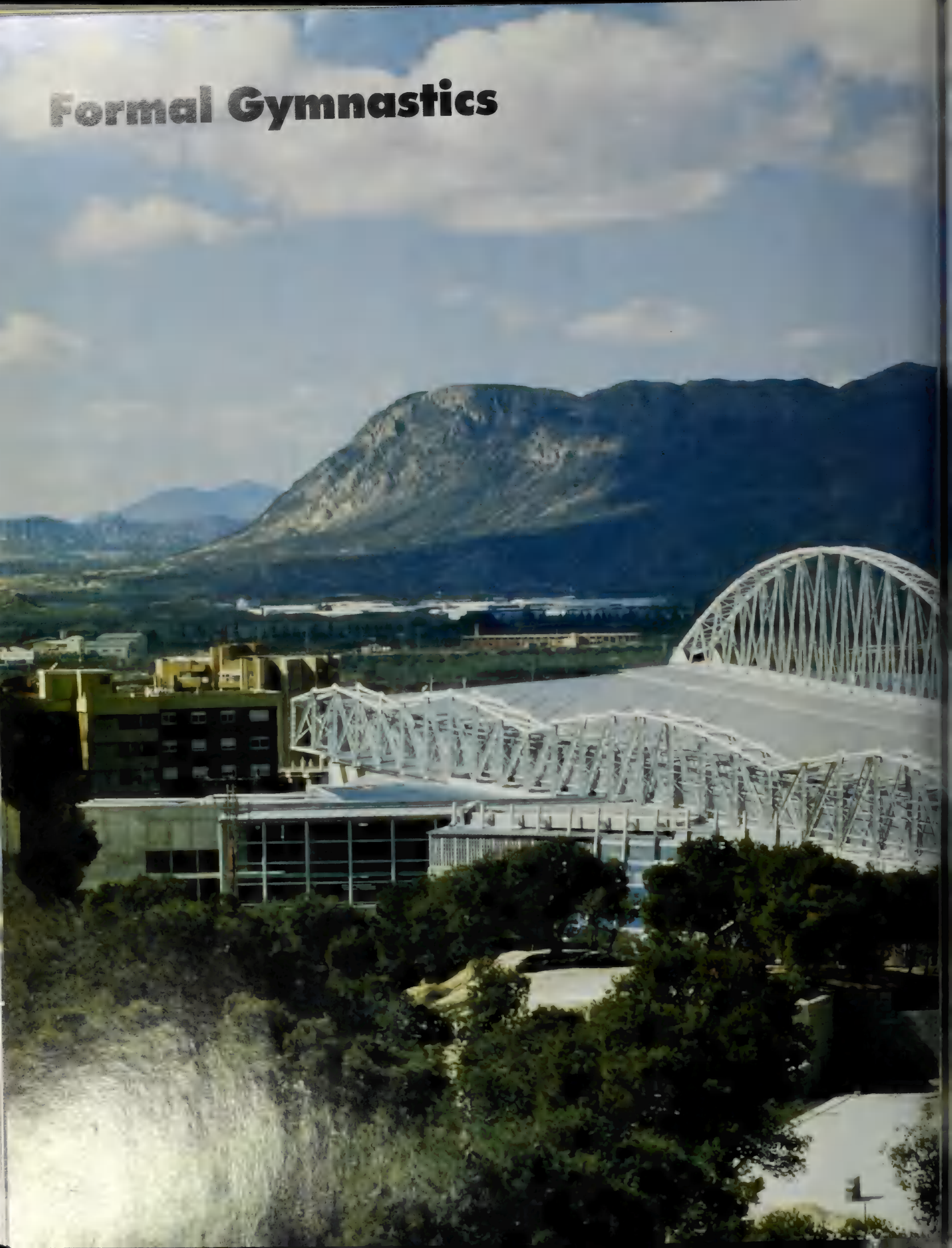
Circle 15 on inquiry card

Building Types Study 718/Recreation

Anyone who wants to paint an up-to-date picture of recreation must do so with a broad brush. The current craze for incorporating an Entertainment Quotient in every conceivable activity has (no surprise) enlisted a corresponding effort from those who design the buildings that host those activities. Thus the training center for the Spanish gymnastics team goes far beyond the familiar dark, slightly dank venue, through Enric Miralles's acrobatic, free-wheeling structure (page 52). An aquatics center (what used to be called the town pool) in rural Missouri turns the few elements called for by the program into a colorful and amusing ensemble of water-linked motifs (page 58). In a fitness center (also containing a pool) in the Bronx, architect Viñoly, like Miralles in Spain, expresses the idea of physical action through the metaphor of soaring structure (page 74). On the travel-for-leisure front, Arquitectonica transformed the hospitality industry's basic stock-in-trade of bed and breakfast into a kaleidoscope of color and form in Disney's All Star Resorts in Florida (page 64). ShowScan Theater near Los Angeles, designed by Ellerbe Becket, offers the desired experience to a public thirsty for the ultimate fakery of virtual reality (page 62). And, not to be outdone, the experience of shopping has to be made entertaining by retail developers laboring to extract dollars from a jaded public (page 82). Finally, as an exception that proves most rules, the city of Atlanta, striving to complete its facilities for the 1996 Olympic Games, struggles through sober, plodding exertion to at least get the buildings up, never mind fun and innovation (page 70). *S.A.K.*

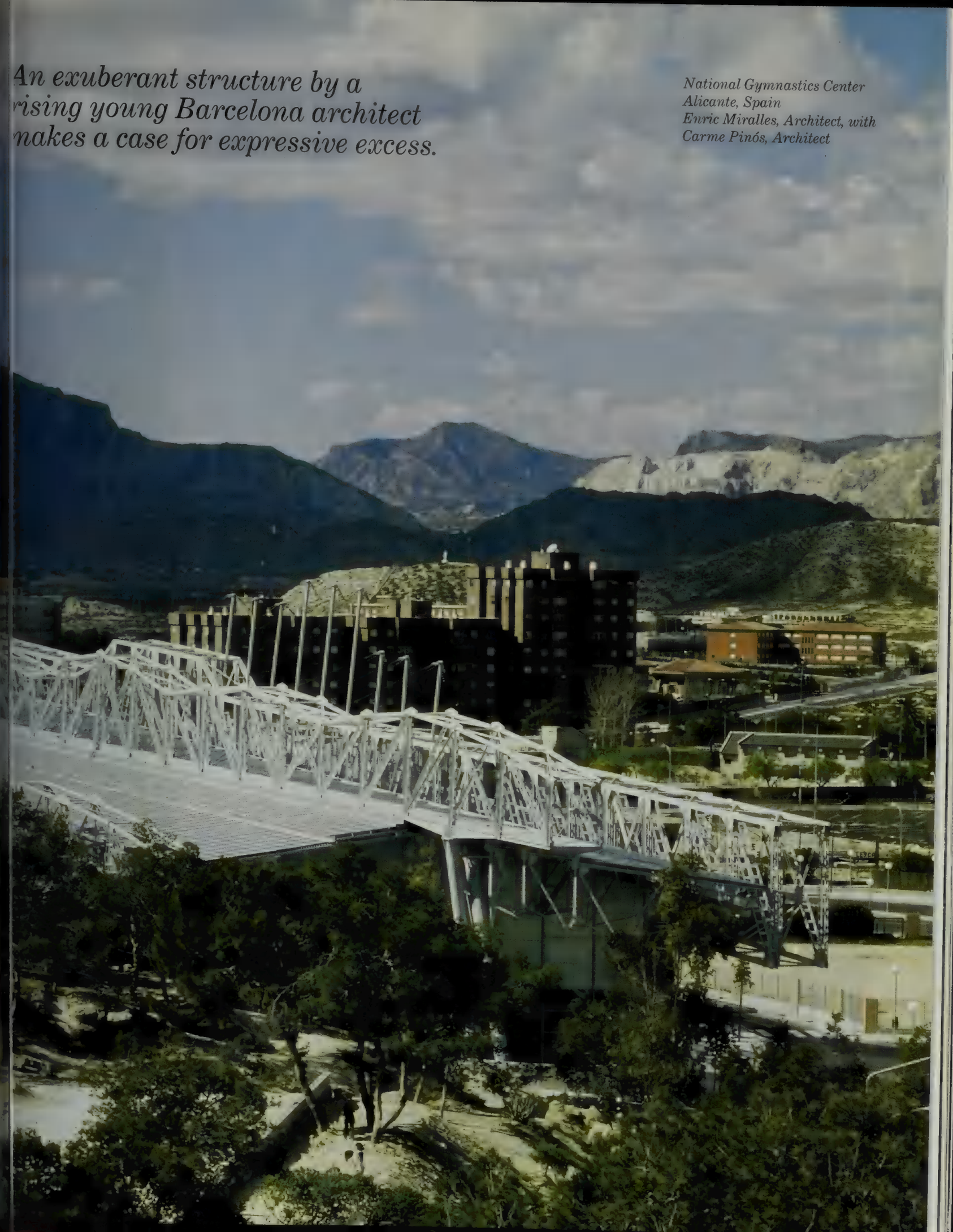
Manufacturers' Sources listed on page 95

Formal Gymnastics



An exuberant structure by a rising young Barcelona architect makes a case for expressive excess.

National Gymnastics Center
Alicante, Spain
Enric Miralles, Architect, with
Carme Pinós, Architect

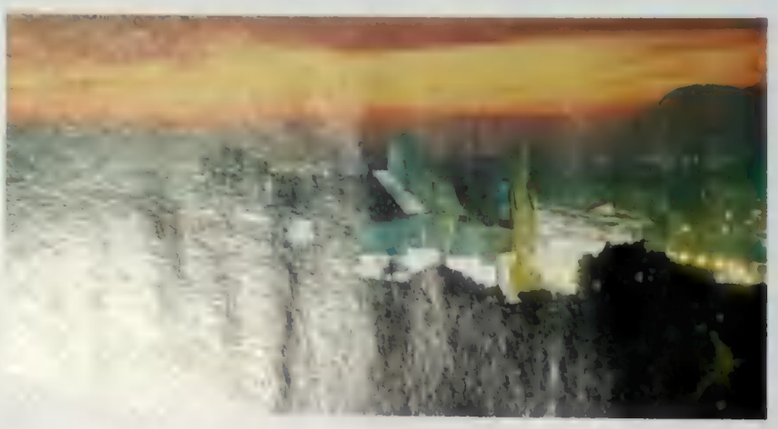


The National Gymnastics Center, home of Spain's national gymnastics teams, is the most important work to date by Enric Miralles, the 38-year-old rebel of Barcelona architecture. In a city dominated by the modern minimalism of Esteve Bonell, the teams of Albert Viaplana and Helio Piñón, Jordi Garcés and Enric Sòria, and others (see RECORD, August 1992, pages 98-113), Miralles makes the case for maximalism, for an architecture at the outer limits of expression. The Alicante building is a sprawling assembly, haphazardly overhanging itself as it rises with out-thrusting concrete bleachers and ramps, angled walls, over-extended trusses, leaning cable masts, and cantilevered canopies spilling in various directions.

The building's basic shape is a T, the 50-foot high stadium with grandstands and competition floor at its head and a large training hall for rhythmic exercises in its stem. The principal spaces are spanned by three large metal trusses, roughly parallel but gradually spreading like a trident to reconcile the wide stadium and narrow training hall. The joint between the two spaces produces a secondary axis, where the public circulation occupies a maze of stairs, ramps and balconies overlooking both. This axis extends in one direction in the form of a large canopy over the public entrance, and in the other with a lower roof of cascading folded planes over a smaller training hall for parallel bars and other floor equipment.

Miralles placed spectator areas at the building's mid-height, reserving the ground floor for athletes. As in Le Corbusier's Carpenter Center for the Visual Arts at Harvard, the public passes through the building on an elevated plane. The entry is an inclined, enclosed drawbridge, which climbs from the street to a curved sloping ramp inside the building that distributes spectators to their seats. Finally, a glass block tower connects the various levels, housing dressing rooms on its lower floors and public restrooms above, and serving as a daylight lens for the large training hall.

The 1993 World Gymnastics Championships held here forced a challenging deadline on the builders. To speed construction, Miralles treated the design as a "problem of assembly," using prefabricated elements and limiting the use of poured concrete and secondary finishes. The roof was erected in a month and a half, and the entire facility completed in roughly nine months, at a cost of about $9.5 million. Most of the prefab elements were custom-designed, bears little resemblance to industrialized repetition. At the roof, the non-parallel trusses and their discontinuity with the walls assure that scarcely a single condition of the structure or its enclosure is repeated. Miralles's goal is not to discipline forms and materials, but to unleash the expressive resources hidden inside them, reviving romantic notions of the artist as a liberating force. *David Cohn*

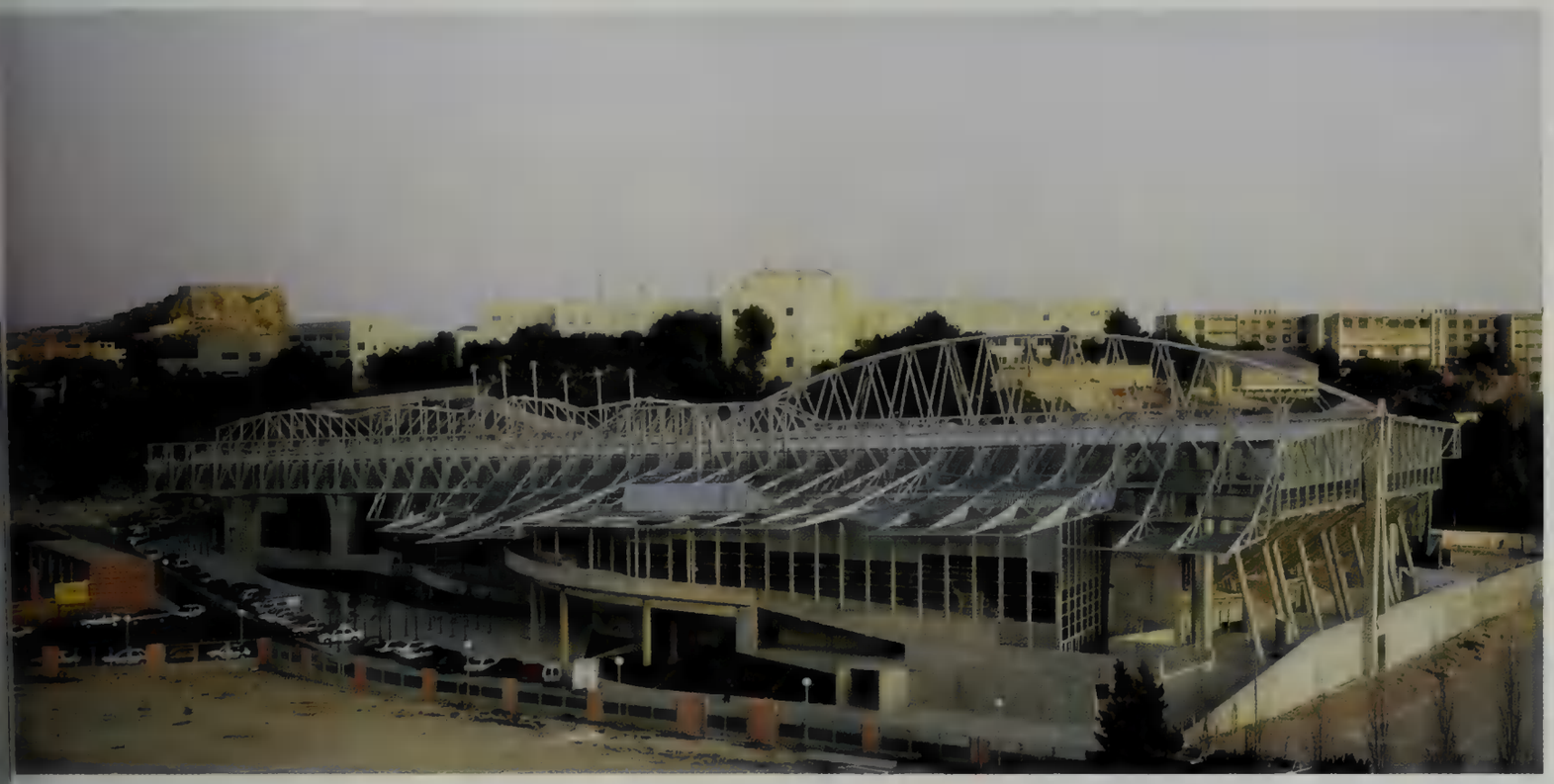


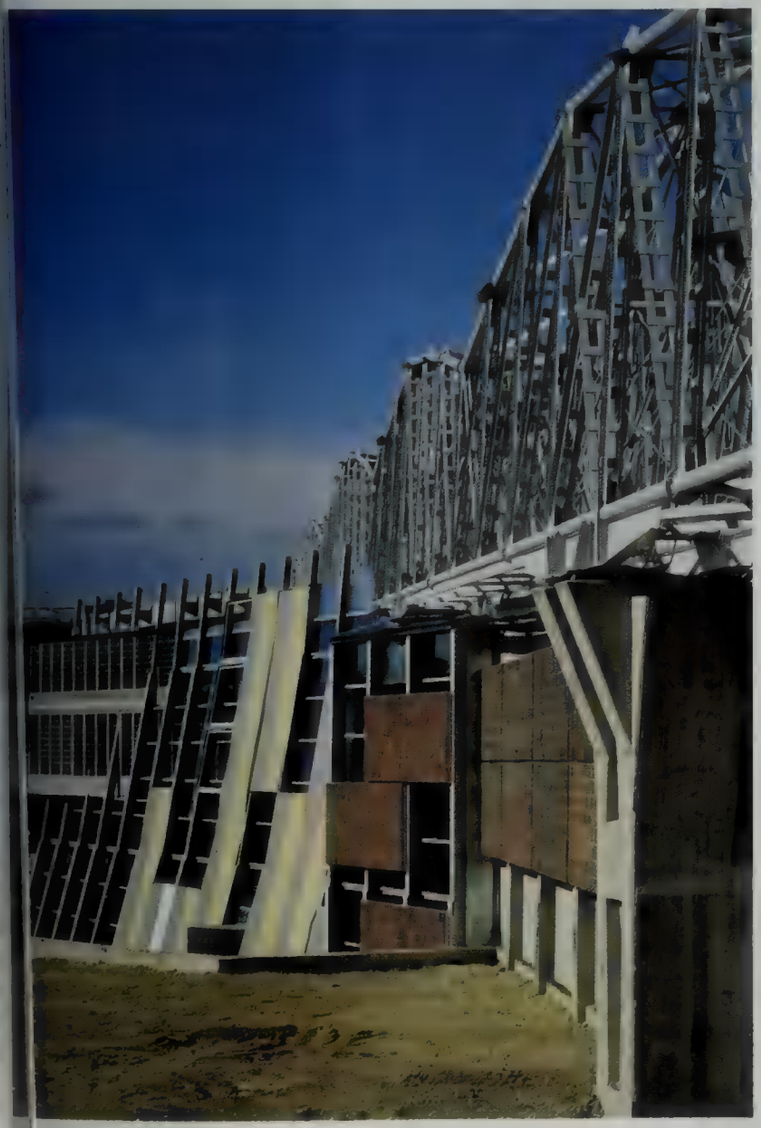
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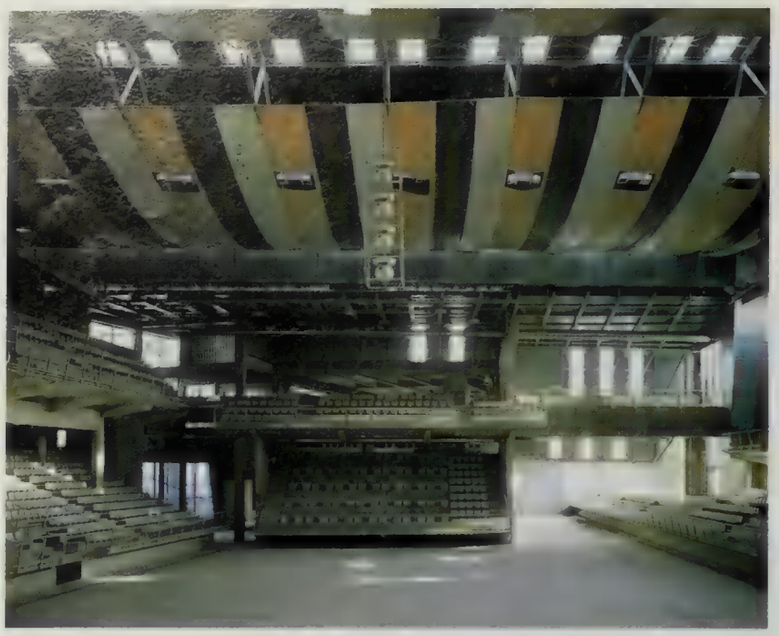


The roof trusses are composed of rectangula members, T profiles, tension cables, and oth shapes; the central truss lifts in a graceful arch to span the stadium (opposite top). The public enters via raised concrete ramps on the north elevation (opposite right); the sout is dominated by the screened glass wall of th dressing room and bath tower (opposite left). The stadium bleachers project on tilted pillars over the emergency exits of the west facade, which is seen from the vehicular approach to the facility (above).

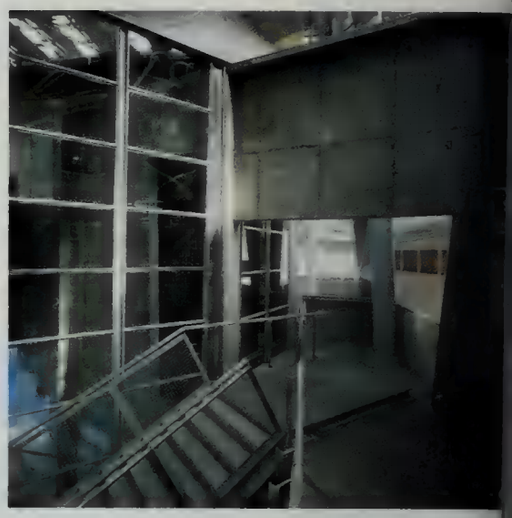






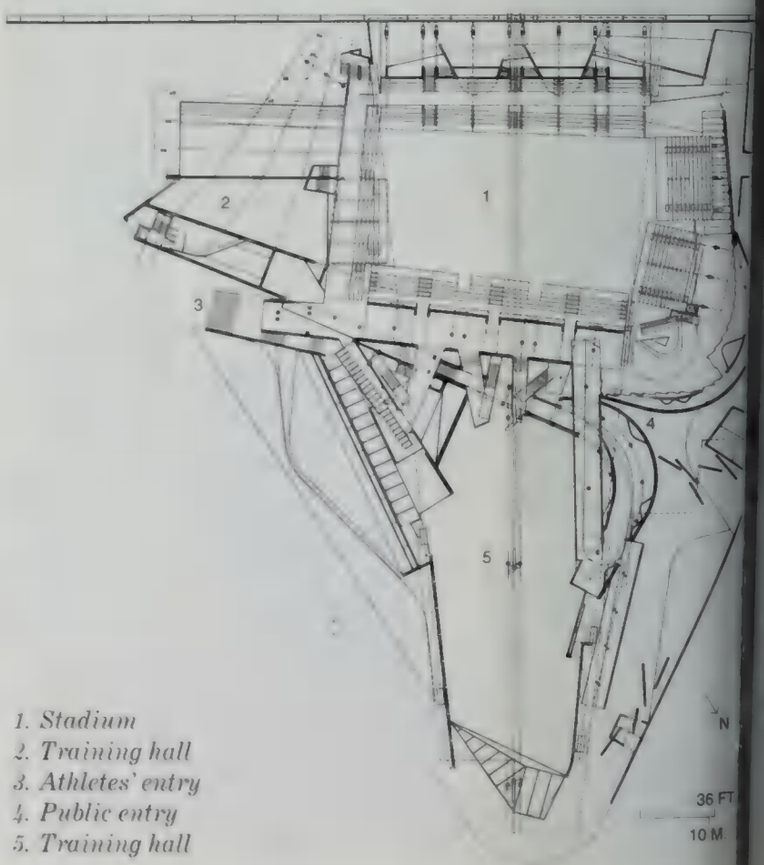






Credits
National Gymnastics Center
Alicante, Spain
Owner: *Department of Culture, Valenica*
Architect: *Enric Miralles, Architect—Enric Miralles, Carme Pinós, design; Enric Miralles, Josep Mias, execution*
Engineer: *A. Obiols, I. Moya, J. Carrasco, BOMA (structural); A. Salazar (mechanical)*
Contractor: *Cubiertos, Mzov*

In plan, stadium and training hall are separated by the elevated public access and circulation. The interiors are roughly finished in concrete and steel. Openings in concrete are filled with low-fired clay units or panels of hollow bricks, set with the hollow face exposed to form perforated screens. Metal framing is filled with glass, corrugated metal, or suspended canvas sun screens. All partitions are glass block, even the toilet stalls and showers. The [illegible] is dewit from all [illegible] equipment is seen. The large training hall is serenely grand (bottom) with trios of angled metal columns gracefully intertwined. It is overlooked by the balconies of the public circulation areas (above right) and by the tower housing dressing areas and restrooms (facing page). Miralles's decision to rescue these areas from their usual dank internment under the grandstands and locate them in a tower of light is his most radical gesture.



1. Stadium
2. Training hall
3. Athletes' entry
4. Public entry
5. Training hall

Catching the Wave

Marysville Aquatic Center
Marysville, Missouri
Shoemakersmay Fields and Scott, Architects



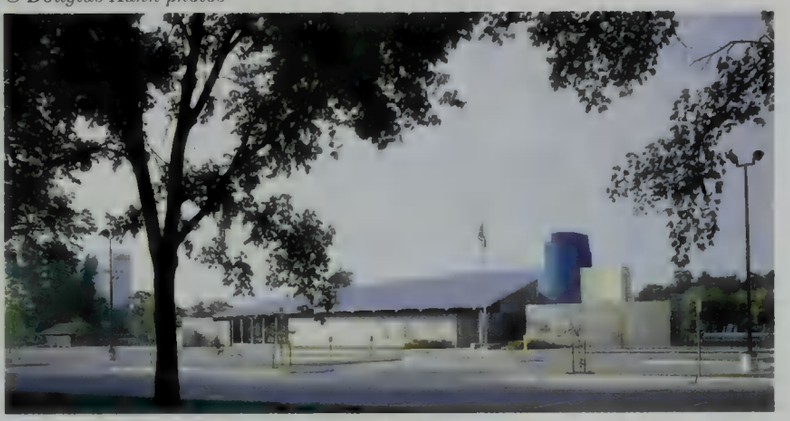
th the possible exception of an ice-cold pop, there isn't much in northwestern Missouri that can break the heat of a summer afternoon like a dip in the old swimming' hole. But Maryville's old pool had outlived its design life, and was losing money. Maryville Parks and Recreation Department director Rod Auxier says, "We wanted to build something really nice, that would be a destination for other communities around us." But money doesn't grow on trees in farming towns like Maryville, whose population is just under 11,000. Getting the community to pass general obligation bonds to fund the project meant the recreation department "talked to every community group that would listen," says Auxier. "We showed them what other cities had done, and slides of Shaughnessy Fickle and Scott's renderings of what we could do. Lots of people said it could never happen here. But the bonds passed."

Shaughnessy Fickle and Scott's design forces disparate, but program-responsive elements together in a colorful and amusing way that draws upon a variety of water-related elements. "When we interviewed for the job," says Mike Shaughnessy, "we talked about the design opportunities, and they were already looking for something with a little more of an entertainment-feel to it, something special. That enabled us to create some atmosphere, an exciting place to come for the day."

To create a complex that would be entertaining, the architects rejected the idea of attempting to unify the very different types of spaces required by the program, instead allowing their differences to dominate. "The idea was putting together a combination of separate building forms," continues Shaughnessy. "There is the function of the water house, the concession stand, shower rooms, and some offices. We thought we would let each one perform its own function, and respond to each function in its own way."

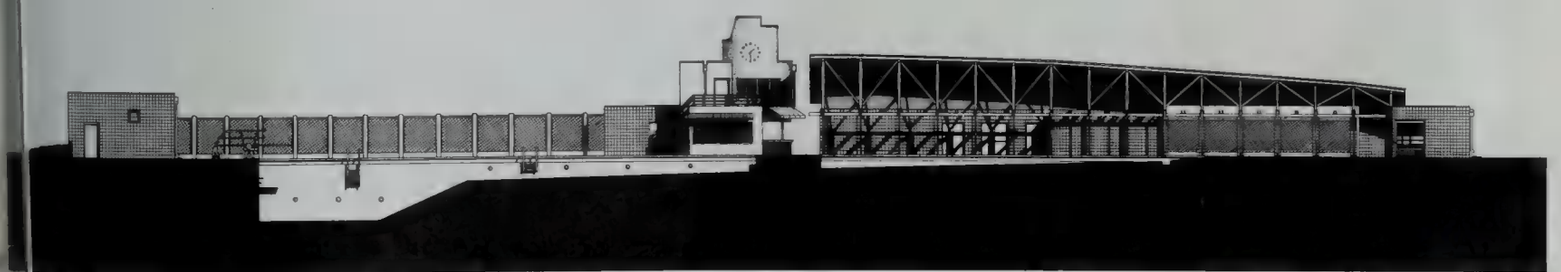
The aquatics center's most dominant element is the wave-like canopy that covers the locker rooms and a dining area, also referred to by locals as "the belly of the whale." "Actually, we thought of it more as a wing-form," says Shaughnessy, referring to the way the form directs prevailing southernly winds into the bathhouse. "We wanted to set up this large, curved form that would tie these areas together, high at the locker houses, and lower at the dining area where the scale is smaller. We also liked the effect of the water reflecting ripples of light onto the underside of the canopy." The canopy is anchored by the building where the ticketing area, offices, and storage are located. This structure draws upon several formal puns: semi-cylindrical grain silo-forms intersect a Mediterranean-villa-like lifeguard tower, whose balcony is guarded by a classic ship's rail. A huge clock counts off the summer's short hours all too quickly. Evidently, Maryville's aquatic center has been just the tonic for the long, hot Missouri summer. The parks department expects over 60,000 visitors this year, a third of them out-of-owners. Best of all, the cool pool turns a profit. *Charles Linn*

© Douglas Kahn photos





From the outside, the Maryville Aquatic Center seems charmingly agrarian, with its sloping metal canopy and a semi-cylindrical lifeguard tower that recalls the concrete grain silos that dot the Midwest (one of Maryville's two grain elevators can be seen in the far left side of the top photo). At poolside, allusions to oceanliners, waves and whales can be found.





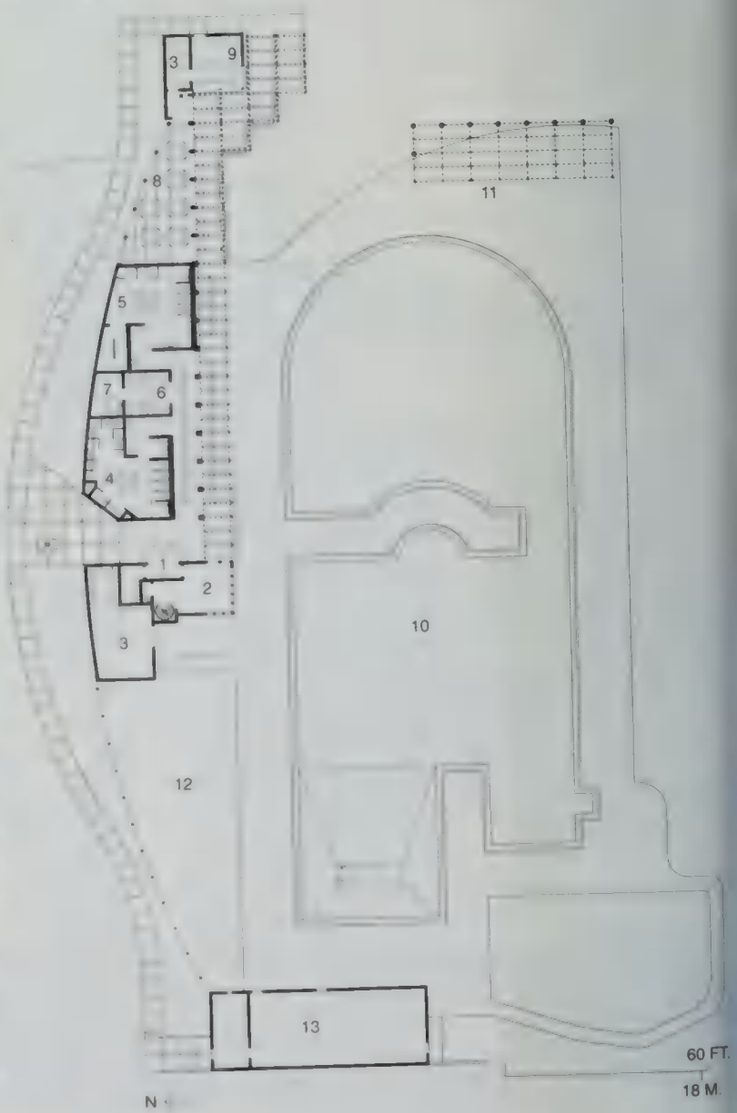
Grasping visual puns that draw upon agricultural structures, beach houses, and fountains that look like spouting whales (left and opposite), Shaughnessy Fickel and Scott's design for the Maryville Aquatics Center has entertainment value in and of itself, satisfying the client's desire that the pool be a regional destination point. The classic poolside clock reminds swimmers the summer won't last forever.

Credits
Maryville Aquatic Center
Owner: *City of Maryville, Missouri, Parks and Recreation Department*
Architect: *Shaughnessy Fickle and Scott Architects—Michael T. Fickle, principal-in-charge; C. Michael Shaughnessy, director of design; Kerry Newman, Bruce Johnson, project team*
Engineer: *Larkin Associates (pool, mechanical, electrical)*
Landscape Architect: *Jeffrey L. Bruce & Company*
General Contractor: *Lawhon Construction Company*





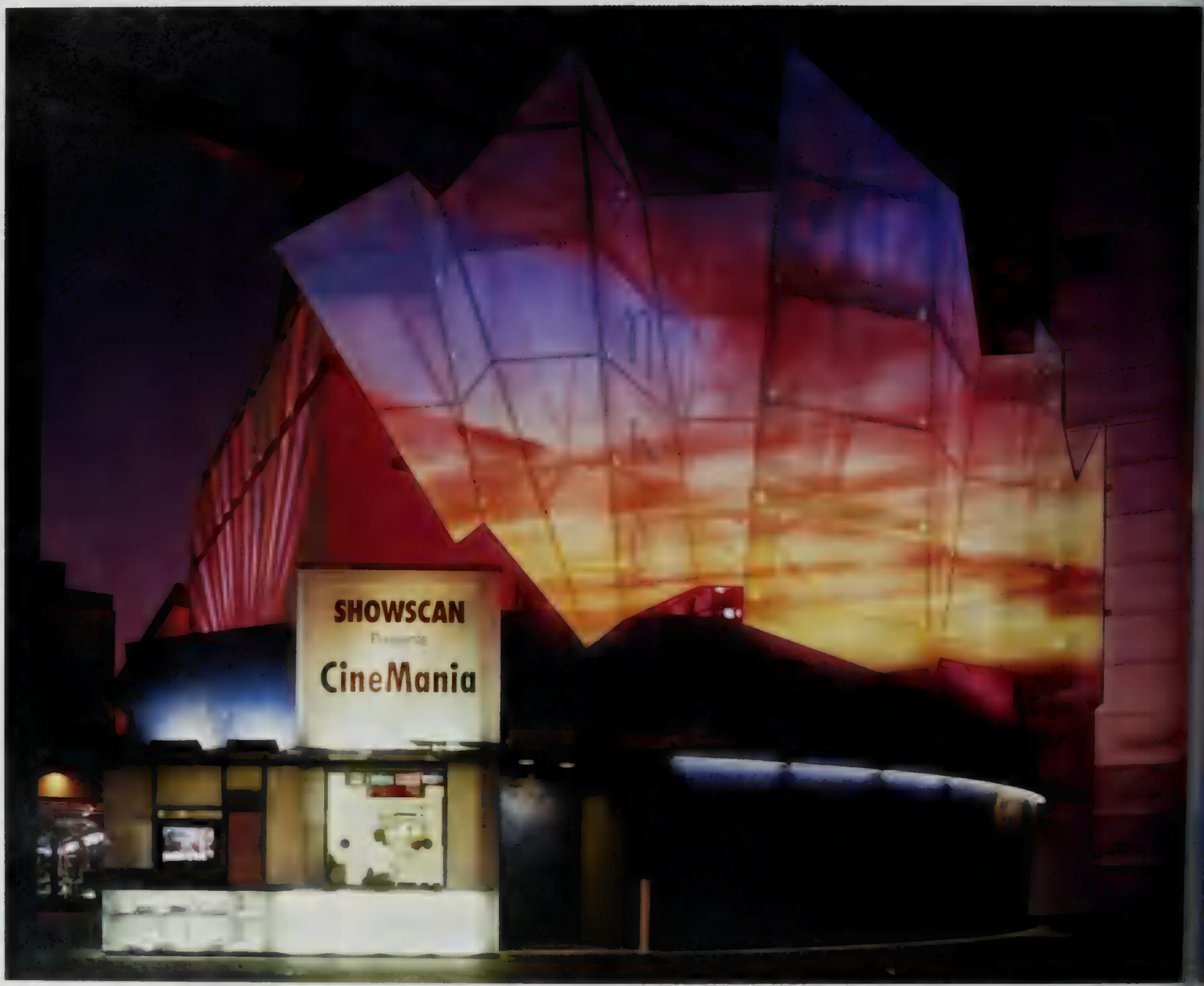
1. *Tickets*
2. *Office*
3. *Storage*
4. *Women's shower*
5. *Men's shower*
6. *Basket room*
7. *Mechanical*
8. *Dining area*
9. *Concessions*
10. *Pool*
11. *Shade structure*
12. *Sunbathing area*
13. *Filter house*




4'-0"
2'-0"

Virtually Thrilling

The client claims to pack more thrills than a 10-acre amusement park into a single theater.

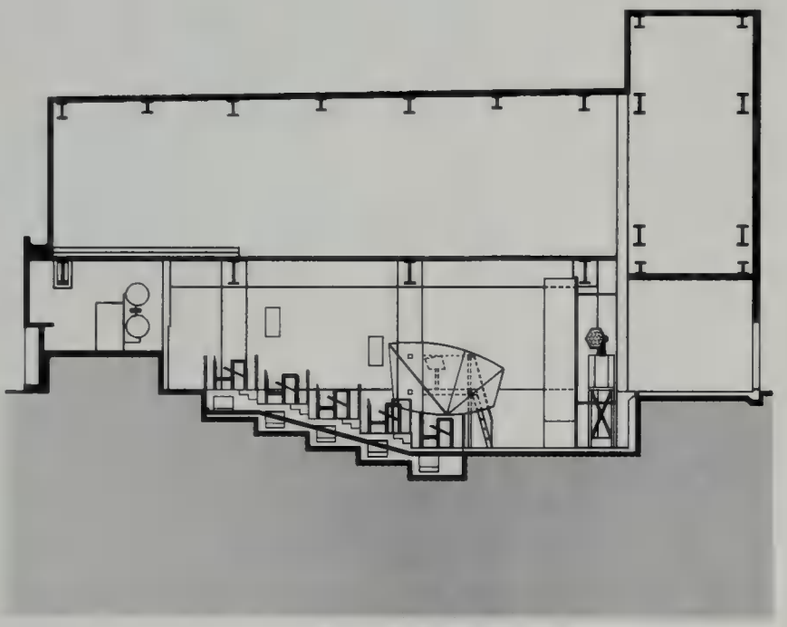


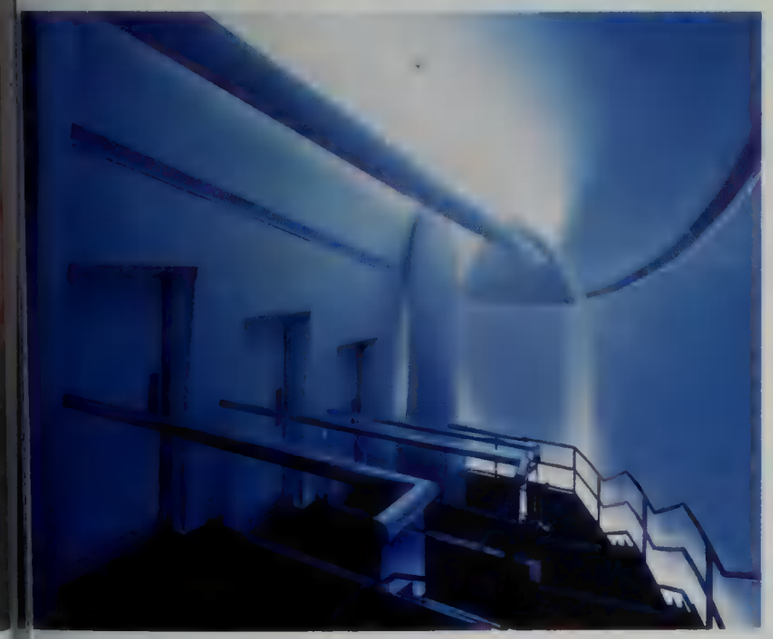
Human love for fiction, notes editor Stephen Kliment [RECORD, July 1994, page 9], often makes fiction seem more real than the real thing. As if to prove his point, the Showscan Corporation has created a series of five-minute, eye-popping, stomach-grabbing "rides" through such locales as Devil's Mine and a cosmic pinball machine. Such effects leap out from 70-mm images projected at 60 frames per [illegible] unfolding 50-ft-wide screen and are enhanced by [illegible] and hydraulic audience seats that move in [illegible] projected.

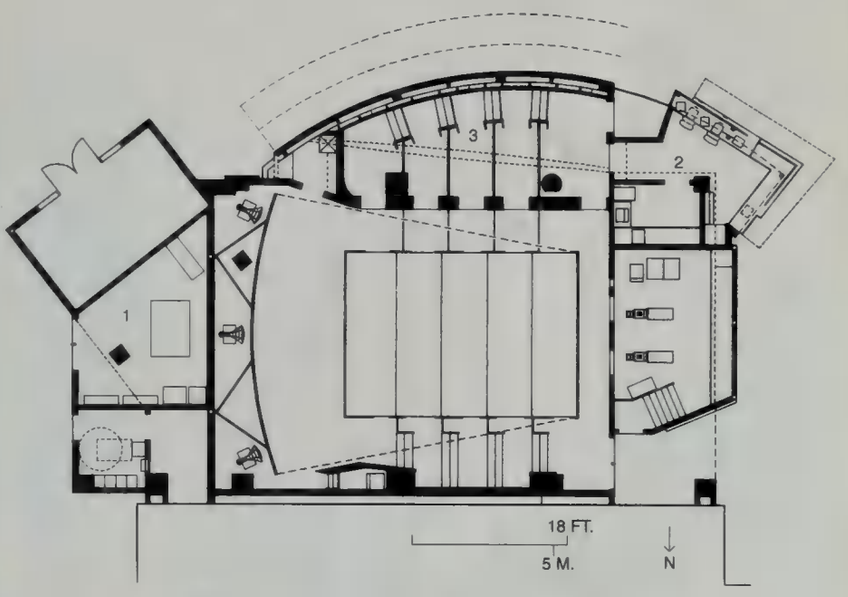
[illegible] for this make-believe, Showscan [illegible] to work in and around a featureless [illegible] a newly simulated "typical" Hollywood street containing real stores and restaurants, itself an exercis in virtual reality. The client anticipates taking the elements of the architects' design worldwide; this would be a prototype. Besides involving themselves in the theatrical mechanics inside, the archite added onto the basic box in ways that would remove viewers from reality in three stages. On the exterior, slowly dissolving images pr jected onto a folded fiberglass screen hint at the surreal experience waiting inside. This is mounted on a curved addition containing a holding space for waiting spectators (photo opposite bottom), wher disorienting environment further removes them from reality. On signal, they move through the doors and across rows of 50 robot-lik seats while previous viewers file up stairs on the opposite side. Cos for the 4,000-square-foot theater were $3 million. *Charles K. Hoyt*

CineMania Theater
Universal City, California
Ellerbe Becket, Architects

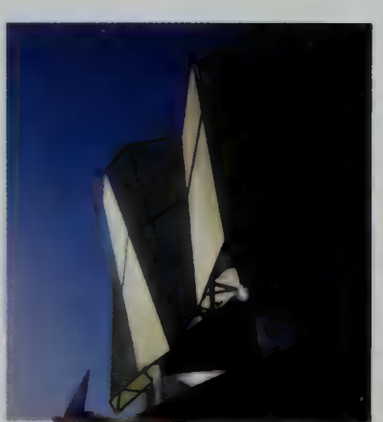








Credits
CineMania Theatre
City Walk, Universal City, California
Owner: *Showscan Corporation—Roy Guimarais, representative*
Building Owner: *MCA Corporation—Jim Nelson, director of planning and development; Debra Merrill, project manager*
Architect: *Ellerbe Becket, Inc.—Tom Goffigon, project manager; Katherine Demetriou, designer; John Frane, Jon Pugh, Matt Ralsten, David Woo, Mehrdad Yazdani, Terence Young, project team*
Construction Administrators: *David Hullinger, Matt Ralsten*
Engineers: *Brian L. Cochran Associates (structural); Harold T. Kahner and Associates, (mechanical); Lucci Associates (electrical)*
General Contractors: *Cal-Pac Construction, Inc.*



The architects' additions onto an existing building include utility spaces (1), a ticket office-souvenir shop (2), and a pre-show lobby enclosed by fluid floating surfaces (3 and center photo this page), described by project manager Tom Goffigon as a box within a box. The curved blue wall of the outer concrete-block box is sheathed in a stucco containing marble dust for a glittering effect.

Five-Star Motel

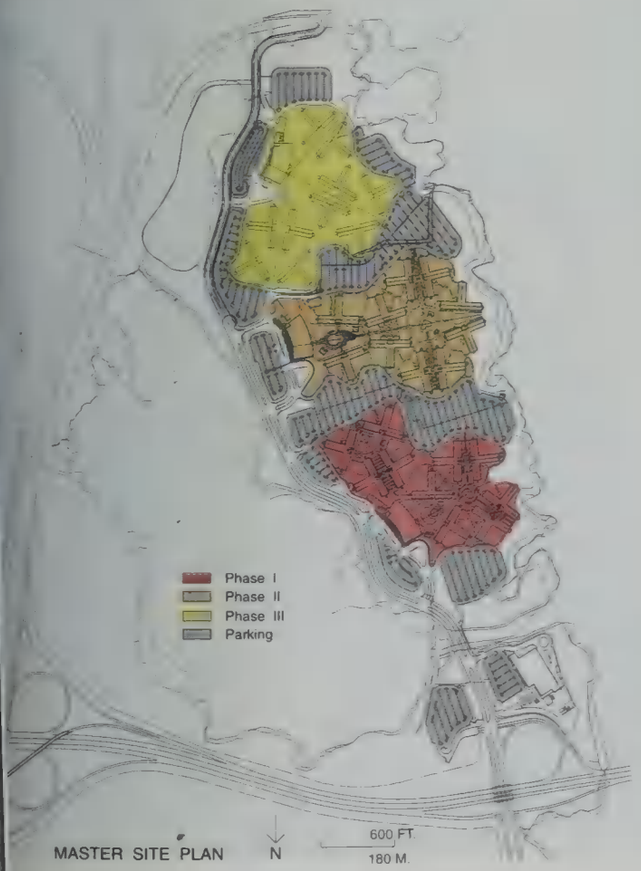
Disney's All-Star Resorts
Lake Buena Vista, Florida
Arquitectonica and
HKS, Inc., Architects



© Dan Forer photos



giant star identifies the entrance of the esort and its porte cochère (above). One- ory-tall letters on the northeast side of the mmercial building line an arcade used as waiting area for buses (bottom right). The ain pool for Phase I assumes the beach otif of the adjacent Surf Inn (opposite). The ll-Star Sports Resort, which is Phase I, has 920 guest rooms in 10 buildings. Phase II, w under construction, will use the same ans, but takes music as its theme.



Priced as economy-class digs on the wooded fringes of Walt Disney World, the new All-Star Resorts are a series of glorified motels dressed up in full pop-culture regalia. Eschewing subtlety and nuance for zip and pizzazz, the architects have created a live-in playground where exterior stairs pose as three-story megaphones and parapets dance like brightly colored waves. Like everything else in the Disney universe, the All-Star Resorts are aggressively themed: Phase I is sports, and Phase II will be music. Each phase includes five pairs of three-story residential buildings, a couple of themed swimming pools, and a one-story commercial building with registration lobby, stores, food court, and video arcade. With its relentless attack on the senses, this is an architecture of instant gratification.

The challenge for the architects at Miami-based Arquitectonica and Dallas-based HKS, Inc. was to work within a tight budget and short construction schedule without giving the project the appearance of "Disney Lite." The first thing they did was design simple concrete-slab buildings following the classic model of motel planning, using exterior balconies instead of interior hallways. By keeping the structures simple, repeating the same plan for each residential building, and using inexpensive materials, the architects were able to lavish attention on the exteriors where fiberglass, perforated-metal sheeting, and foam board are shaped into a myriad of decorative forms.

"What we did was create three-dimensional collages," explains Bernardo Fort-Brescia, an Arquitectonica principal. The major elements in these collages are the buildings' parapets, balcony railings, and exterior stairs. By attaching oversized baseball bats, basketball hoops, surf boards, and team banners to the railings; sculpting the parapets into waves, stars, and letters; and using giant football helmets, referee whistles, and megaphones as pop icons, the designers create the illusion of complexity and animation. As Arquitectonica does in many of its projects, it plays here with changing scales, strong colors, and the element of surprise.

Each phase of the resort is laid out as a sequence of paired motels in which the spaces between the buildings are important elements in the full experience. By splaying some buildings away from each other and aligning others in parallel rows, the architects created a variety of outdoor rooms that double as basketball courts or mock gridirons or swimming areas. After checking in at the commercial building and parking near their motel, guests can walk along meandering paths that cut between clusters of cypress trees and lead from one sport or musical genre to another. "The outdoor spaces, the landscaping, holds everything together," says Fred Roberts, the HKS principal in charge of the project. "From a distance, you see a skyline of unusual objects," explains Fort-Brescia. "With its contrasting scales, colors, and materials, it's like a real city." *Clifford A. Pearson*





1











1. Lobby
2. Registration
3. Luggage
4. Retail
5. Food court
6. Dining
7. Video arcade
8. Service yard
9. Bus canopy

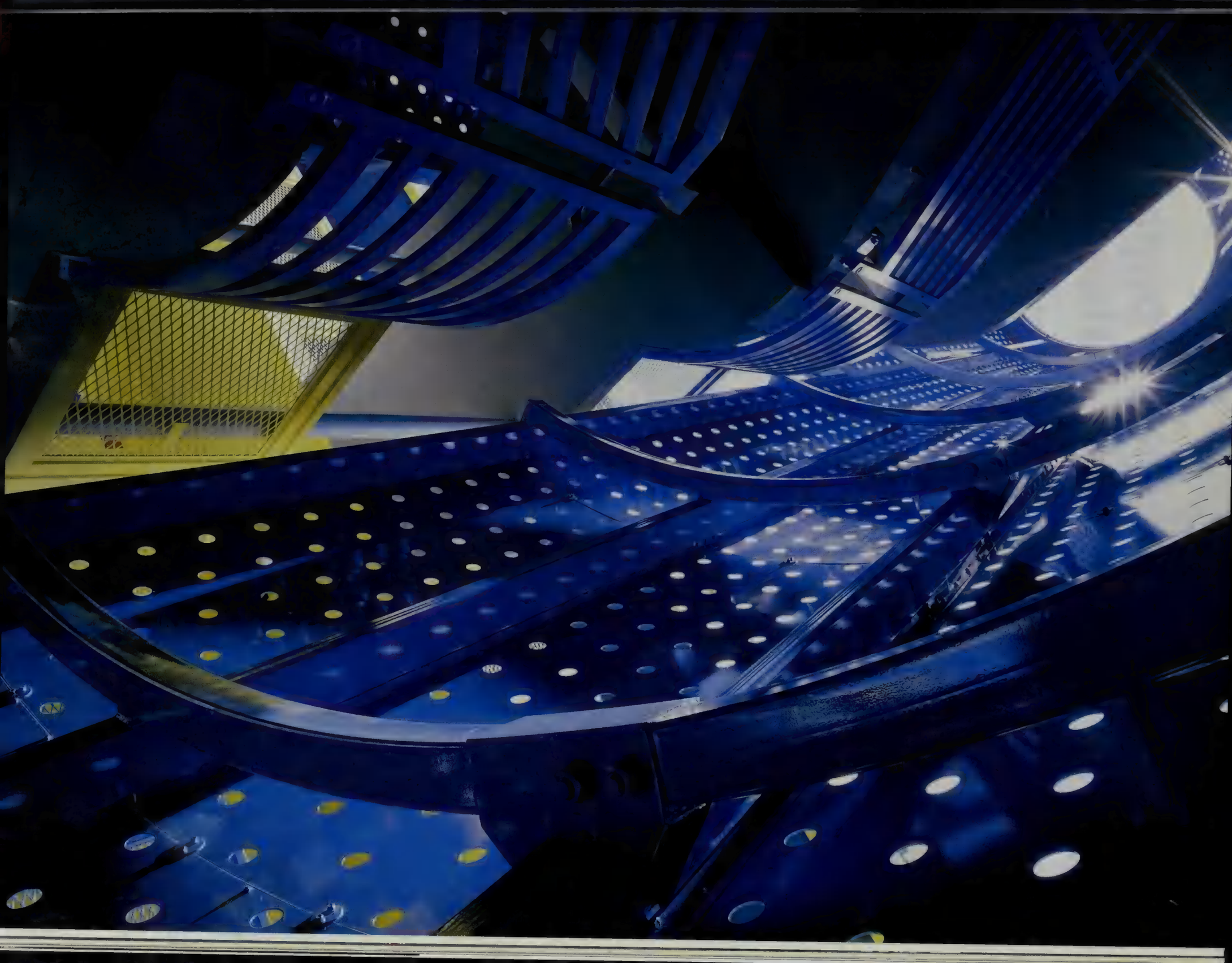


COMMERCIAL BUILDING

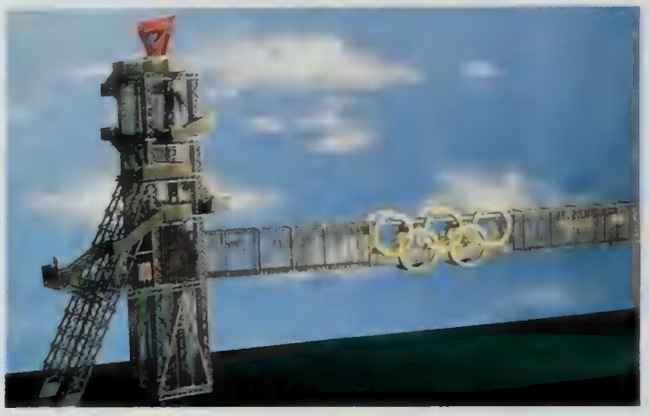
Although identical in design, the two buildings forming the Hoops Hotel (previous pages, 1 and 4) are painted different colors for variety. At the Surf Inn (previous pages, 3) surf boards are made of Plexiglass and the concrete [illegible]. The right) in the commercial building use the same bold graphics found elsewhere. A perforated-aluminum-and-steel-frame megaphone envelopes a stair at the Hoops Hotel (opposite).

Credits

Disney's All-Star Resorts
Lake Buena Vista, Florida
Owner: *Disney Development Company*
Design Architect: *Arquitectonica—Bernardo Fort-Brescia, Laurinda Spear, principals; Sergio Bakas, project manager; Carlos Touzet, project architect; Rafael Torrens, Eduardo Llano, Jenifer Briley, Suchi Reddy, Dennis Witnauer, Michael Dax, design team*
Architect of Record: *HKS, Inc.—Fred Roberts, principal; Rob Warrick, project designer; Kirby Chadwell, project architect for buildings; Brad Schrader, project architect for icons*
Engineers: *O.E. Olsen and Associates (structural); H.C. Y and Associates (mechanical/electrical/plumbing); Ivey Harris and Walls (civil)*
Consultants: *Edward D. Sto Jr. and Associates (landscape design); Herbert-Halback, Inc (landscape architect); Design Continuum (interiors); Comm nication Arts Inc. (graphics); Grenald Associates (lighting)*

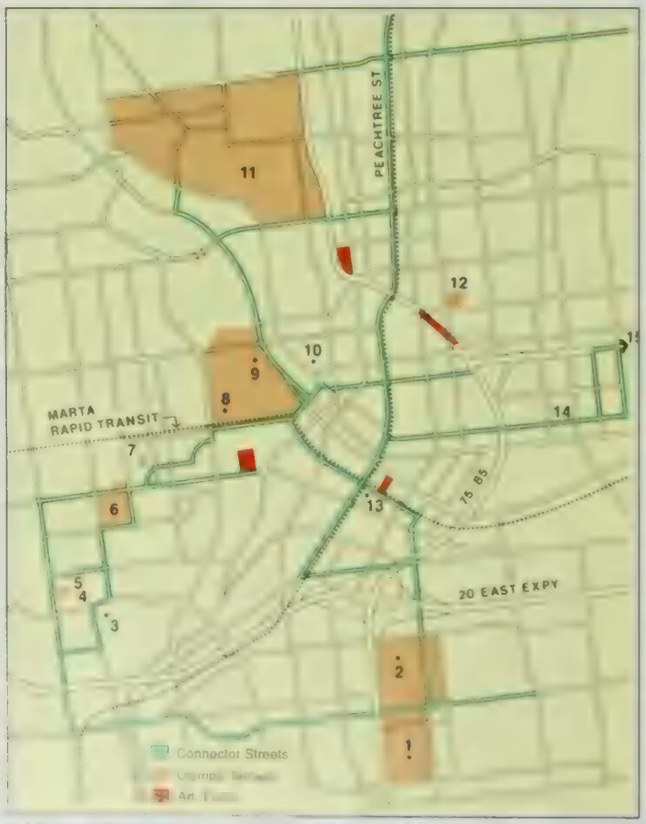


Lost Opportunity in Atlanta?





While planning proceeds apace on Olympic venues (torch by Siah Armajani, above), Atlanta's commitment to civic and public projects related to the Olympics (below) lags expectations.



Four years after upstaging Athens, Greece, to win the 1996 Olympic Summer Games, and two years before lighting the torch, Atlanta's effort for this Centennial of the modern games is now largely programmed and designed. For all the hype that landed the games, for all the excitement sure to build as the games approach, a sober reckoning is evident in the level tones of design-conscious observers when they size up the prospects for 1996.

Two years from the opening ceremonies, there is little evidence of the upcoming to-do beyond banners tacked over the baggage-claim exits at Hartsfield International Airport. While crews build a few new dormitories to bring Georgia Tech's on-campus accommodations up to Olympic Village size, construction scarcely has begun on sports venues other than the main Olympic Stadium.

One conclusion seems clear: Atlanta is no Barcelona. Observers within and without the Games acknowledge the marked difference between this event—occurring in America's long overlooked and most self-conscious territory, the South—and the 1992 Games on the design-obsessed Spanish coast, which was an $8-billion, central-government-sponsored adventure in urban placemaking [RECORD, August 1992, pages 98-113]. Atlanta's vision is not nearly so grand; its pockets (local ones, primarily) not nearly so deep: investment in public and private construction projects will run well under $1 billion, perhaps only $700 million. Atlanta surely will be taxed by an Olympic-scale event, but boosters are convinced that its huge airport, its still-shiny rail rapid-transit system, its crisscrossing interstate highways, its brand-new sports dome, and a huge convention complex are geared for the crowds.

A bare-bones Olympics

Design seems only incidentally to have entered the Olympic equation in Atlanta. The city is counting on Southern hospitality and a can-do spirit to enchant the crowds. After all, winning the modern games' centennial event over no less a competitor than Athens (Greece, not Georgia), amazed even this characteristically brash city. (The organizers' $7-million promotion didn't hurt either.) "Architecture has almost been an Olympic event in the past, but it's not here," says David Hamilton, a local architect who helped organize urban-design activities around the games. There has been almost an aversion to exploiting design as a solution to issues attending the Games. "We didn't ask anybody to make an architectural statement," says Wilford Ray, director of construction technical services. "We didn't expect anybody to have the time or the budget to do much more than design a good quality, functional building." Adds Catherine Fox, art and architecture critic for the *Atlanta Journal/Constitution*: "High design, bringing in internationally renowned architects, never was a goal. Atlanta does not have that kind of design tradition. I infer that those in charge equate high design with more costly design. It's consistent with the general public's lack of understanding of the value of good architecture."

Ken Friedlein was formerly press secretary to Senator Terry Sanford and an executive national editor of the Charlotte Observer. *He studies architecture at North Carolina State University.*

Will Atlanta's 1996 Olympic effort founder on its lack of commitment to public amenities and urban revitalization? By Ken Friedlein

Contrast Atlanta's attitude with Barcelona, which managed to construct a living catalog of works by local professionals while also making room for Santiago Calatrava, Arata Isozaki, Frank Gehry and Alvaro Siza. The 1996 effort plainly lacks the breadth and force so apparent in Barcelona, where the will and the way were provided by Mayor Pasqual Maragall's drive to use the international spotlight as an occasion to build on a rich architectural history. Where Maragall, an urban economist, had the weight of the nation's socialist government behind him, Atlanta's bid for the games was a private venture, one attended by nearly obsessive concern for avoiding a public bailout. The noise subsequently drowned discussion of how public money might wisely be raised and invested to create lasting benefits from the games.

What will visitors find?

Instead, Atlanta hopes to win over visitors and athletes with a decidedly people-oriented focus. Andrew Young, the 1960s civil rights leader who subsequently was the city's mayor, a U. S. congressman, and the nation's U.N. ambassador, joined with real-estate lawyer William Payne, a former college football star, to portray Atlanta as the embodiment of multicultural Olympic spirit in the heart of the racially notorious American South.

There are, however, larger issues that Atlanta has only peripherally addressed, but which may prove crucial to the impression of the host city that spectators and the billions of television viewers will take away. Many of the venues are centrally located (map opposite), but most of the visitors are expected to be spread out over the 22-county metro area. (Downtown will largely become an enclave of officials and the international press.) If the intention is for local people to charm visitors, there seems scant opportunity to do so. Atlanta's visitor facilities focus on business conventioneering rather than tourism. It does have such attractions as the Martin Luther King Center and Underground Atlanta, but its urban center is largely empty at night, with massive convention-center blocks, blank-walled warehouses, declining low-income housing projects, and a sea of dispiriting surface parking. The entire city, in fact, has little tradition of civic or public space. Thus, venues such as Georgia Tech and the Atlanta University, Morehouse College, Morris Brown College, and Spelman College complex typically also lack public gathering spaces and don't have natural urban links.

Indeed, the city has hardly focused on the Games as an opportunity to move on larger urban challenges. And, critics have argued, the logistical needs of the events are running roughshod over the needs of the venues' neighborhoods—many populated by largely poor, mostly African-American residents. The sponsoring Atlanta Committee for the Olympic Games (ACOG) argues that it has its hands full readying facilities, and that it has done its part by steering work on the sports venues to local designers, especially to minority-owned firms. Indeed, their commitment to minority enterprises is unique in its ambition (page 73). Many of the firms, however, are not nationally known, and if the designs are seen as only adequate, the firms' reputations will not be enhanced. (Atlanta's bleakly efficient airport is a case in point.) Organizers report the projects are on schedule and meet the revised budget, which no longer projects the Games as a net revenue-raiser. Through it all, emphasis is on practical solutions and economical materials and finishes. "I went to Barcelona and saw . . . and I knew we wouldn't be able to do what they had done," says Ray, the construction services director. "We were only going to be able to spend the money we were going to take in."

The uphill battle for a larger civic vision

There was some early recognition that the Olympics should mean more than just getting a village together and creating athletic venues. But convincing the city to act on ideas has been another story. "The question is how do we leverage this opportunity to make some long-term improvements," says H. Randal Roark, a Georgia Tech architecture professor on half-time leave to serve as director of planning and design for the Corporation for Olympic Development in Atlanta (CODA). A small, city-created agency, CODA works out of borrowed offices to raise money and execute public-space projects, focusing especially on low-income areas near key Olympic sites.

The American Institute of Architects dispatched a Regional/Urban Design Assistance Team (R/UDAT) to Atlanta in 1992. The Architectural Society of Atlanta has pursued an ambitious program of Olympic projects, including an urban design charrette last October and an international competition on public space this spring. Results have been fragmentary. CODA, guided by the R/UDAT study, identified more than $200 million in Olympics-related neighborhood, pedestrian corridor, and public-art projects. As a result, some efforts have now been made to target neighborhoods around the venues for these kinds of urban improvements. The urban design charrette last fall focused on the bleak quarter that separates downtown hotels from the mega-centers of the Omni sports arena, the Georgia Dome, and the World Congress Center. "Our proposal was that it become the Greenwich Village of Atlanta—dense, mixed-use, green, pedestrian, with lots of 24-hour activity," says New York architect and educator Michael Sorkin, who led one of the design teams. But the raw proposals were unnsatisfactory to a city eager for ready-to-build solutions.

Still, the charrette seemed to stir the Olympics committee. In one of his few non-athletic initiatives, ACOG president Payne proposed a 72-acre festival gathering place for "Atlantans and Georgians to meet the world" just a few weeks after the competition. He called it a "doable concept" if government and civic leaders would follow up. "I've got to get back to putting on the Games," he added. That was November 1993. Georgia officials are backing the idea, and it appears the state will acquire the parcels and clear the land. A commitment as to final site, size, and funding may be made after this story goes to press. At that time, officials may offer a request for proposals to designers. After the games, the area may be redeveloped—no one seems certain to what end.

Most recently, the design competition sponsored by the Architecture Society and CODA solicited public-use installations near various Olympic venues (next page). Rather than inspiring officials, it seemed mainly to stir up their anxieties about getting ready. "People wanted cookbook solutions. What they got was a lot of analysis, " says David

Hamilton Roark believes, at best, one of the design ideas—a very kinetic folk art park where two overpasses bridge an expressway—might be pursued.

There is ill-concealed disappointment among activists. "These weren't just decorative, pretty little schemes," says Sorkin, who also served on the competition jury. "We wanted points of departure that addressed the social and environmental needs raised by the Olympics in particular and, more generally, by the condition of public space in Atlanta and the nation." The idea of a job-training facility across from the Olympic Village, he argues, is not so far-fetched.

"Outside the Olympics fence" urban improvements

Meanwhile, Atlanta is destined for some improvement projects associated with the Olympics, from myriad sources. Complaints raised by residents of run-down neighborhoods near Olympic venues drew attention, and the Department of Housing and Urban Development early on committed $38 million to redevelop Techwood Homes, the nation's first federal public-housing project, located by the Olympic Village at Georgia Tech. The Summerhill community next to the Olympic Stadium is slated to get 200 new housing units. Surface transportation funds from the Department of Transportation will help finance streetscape improvements along "promenades" linking key Olympic sites with adjacent neighborhoods, college campuses, and downtown hotels. "We're so impoverished in public space," says Roark, "that a lot of the work is basic infrastructure stuff like new sidewalks, street trees, street lights and furniture, and public restrooms, and other basic amenities that assure comfort and security." About half the promenades are funded and will be ready in time for the Games, reports Roark. If the Games' momentum does not dissipate, the rest of the promenades will likely get completed as well. Atlanta itself scheduled a bond referendum that included $10 million for Olympic projects. The city also is seeking public-art funding from the National Endowment for the Arts. Even ACOG, the sporting organization, is getting into the act, supporting construction of homes on a neglected street near Olympic Stadium. The result? "You'll see an impact in the city," says Roark, who then adds, "but we'll all be disappointed we didn't do more."

While outsiders widely praise the organizing committee's success and easily understand the focus, there is regret that the go-get-'em spirit that won the games hasn't flowed into broader concerns. "If somehow that spirit could be brought to bear on urban-design issues, it would be wonderful," says Sorkin. "But it's probably too late to hook it to the Olympics. They've blown an opportunity to think in a really comprehensive way about the city, and Atlanta badly needs it."

The failure to go beyond narrowly focused functional design solutions is not purely a local one. It testifies to the low priority given design as both a problem-solving endeavor and one that contributes to a city's pride and the welcome it offers visitors. While events like R/UDATs have long been seen as a means to educate citizens on the value of design, perhaps they're no longer enough. One local observer laments that Atlanta's effort, like the Los Angeles games in 1984, became so focused on the resources of a single city. Elsewhere in the world, an Olympics is a national event. "Here was the single best example of an opportunity to bring attention to urban issues—which is what we know architecture of the next century is all about," he said. "It was the opportunity of a lifetime to do something in relation to the whole [illegible] Atlanta." And the reputation of urban [illegible] as crumbling, ridden with poverty and [illegible] repair. ■

© Top and bottom courtesy COPA







A design competition sponsored by the Architecture Society of Atlanta and CODA solicited public-use installations on four to over sites adjacent to various Olympic venues. Top and middle: "A Place for the People," by Robert D. Clements, Roberta Unger, Tony Loadholt, Chito LaPena, and Kenneth Beal of the School of Art at the University of Georgia. Above: "Homeless Shelter," by Brian Wurst of Audubon, N.J. The event, juried in May, attracted 700 entries from 48 states and 24 countries. CODA had agreed to contract the winners and pursue funding. Whether anything is built is an open question, given the shortage of time, the scarcity of money, and the apparent impracticality of the underdeveloped ideas such an open-ended competition typically attracts.

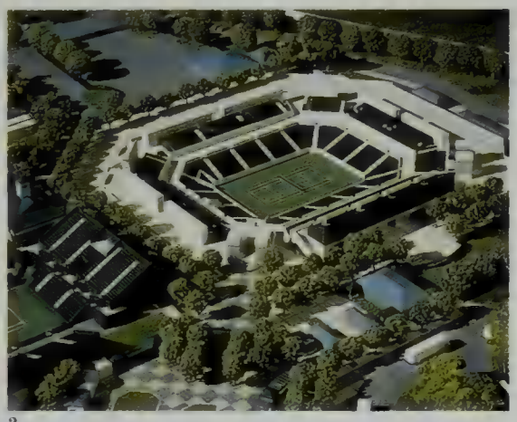
Two Years and Counting: Progress on the Venues

Firms owned by minorities and women have won handsome shares of Olympics design work: 80 percent for the field hockey center, 25 percent for the Olympic stadium, 45 percent for the aquatic center, 90 percent for a basketball arena.

Atlanta is on time," announced International Olympic Committee president Juan Antonio Samaranch during a May visit to the city preparing to host the 1996 games. A venue-specific facilities master plan was completed in March 1992 by Sizemore Floyd Ingram, a joint venture of two local firms. The Atlanta Committee for the Olympic Games (ACOG) has awarded design contracts for all new sporting venues to be built in the metro area. Comments architect William J. Stanley III, whose firm won two contracts: "Some of the venues look quite exciting. I think each responds to its site and the peculiarities of its program. But more importantly, they respond to the really strict needs ACOG has placed on each of the venues. Since the notion is that these games must be at the very least break-even, the venues cannot come in over budget." Organizers take pride in the high percentage of design teams that are Disadvantaged Business Enterprises (DBEs), or are joint ventures involving DBEs, and that most of the firms are local. The field hockey center (1) was designed by a joint venture of Turner Associates, a minority-owned architectural firm based in Atlanta, with HNTB Sports Architecture Group of Kansas City. The tennis center (2) is being designed by a joint venture of four Atlanta firms: R.L. Brown and Associates, which is minority-owned; Nichols Carter Grant Architects; Lesser Fabrap International; and Tunnell-Spangler & Associates. The rowing, canoeing, and kayaking venue (3) is under design by an Atlanta joint venture of Armour, Cope & Pond and B&E Jackson, a minority-owned firm. A joint venture of two Atlanta firms designed the aquatic center (4): Stanley Love-Stanley; and Smallwood, Reynolds, Stewart, Stewart and Associates. The 85,000-seat Olympic Stadium (5) was designed by a joint venture comprising Atlanta's Heery International; Rosser Fabrap International; Williams-Russell and Johnson, a DBE engineering firm; and Derbe Becket, whose sports-facility practice is headquartered in Kansas City. Four more non-ACOG-financed venues are on the boards, and three existing arenas are slated for adaptation. The state university system is building an Olympic village, while other authorities in Georgia and Tennessee build a baseball park, yachting marina, and whitewater kayaking course. *Katie Black, Atlanta*



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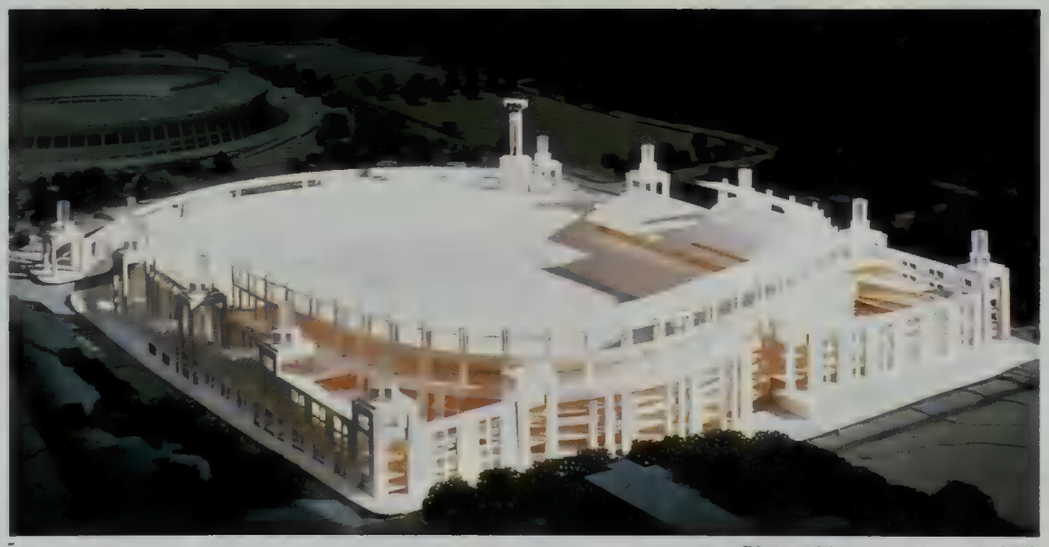
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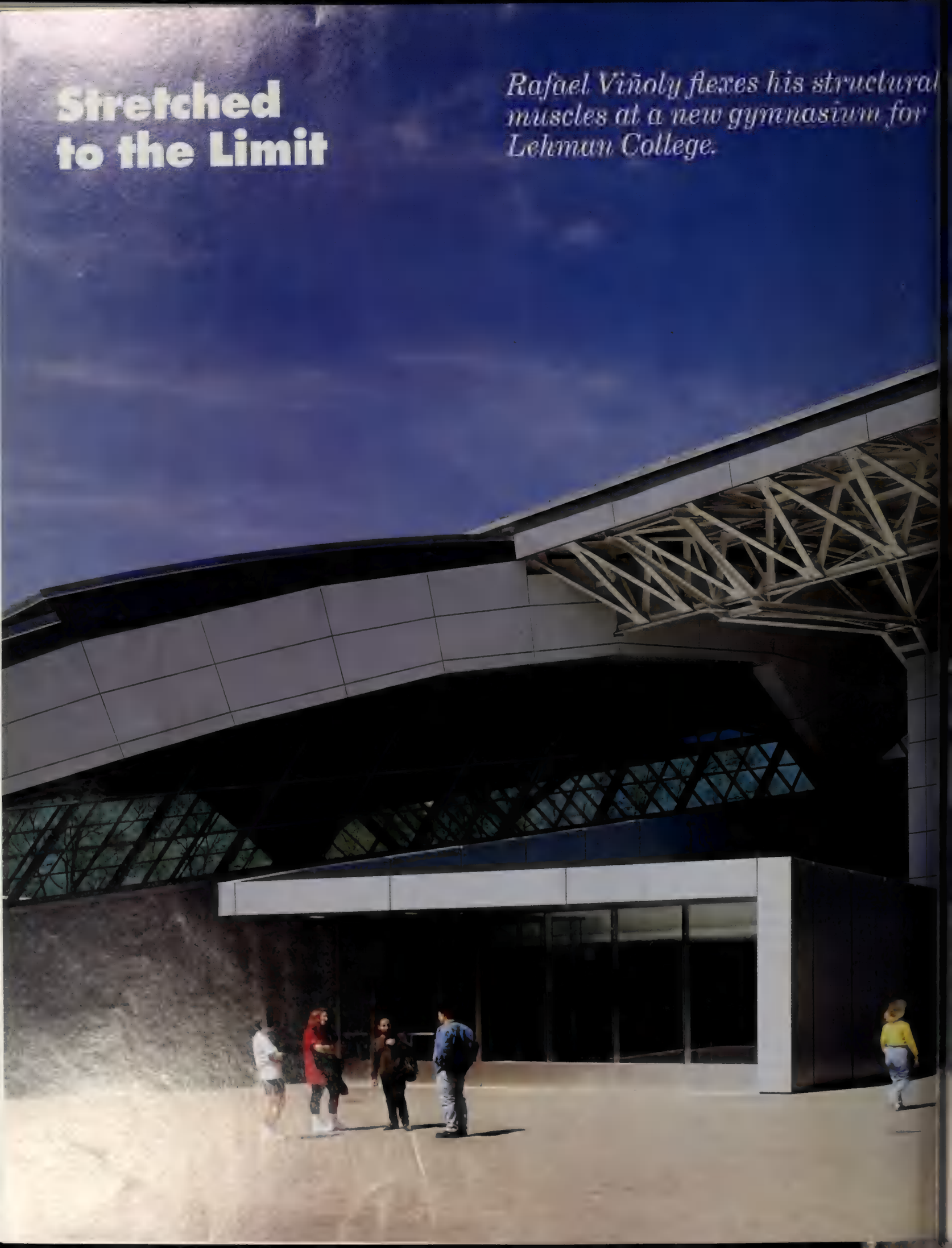


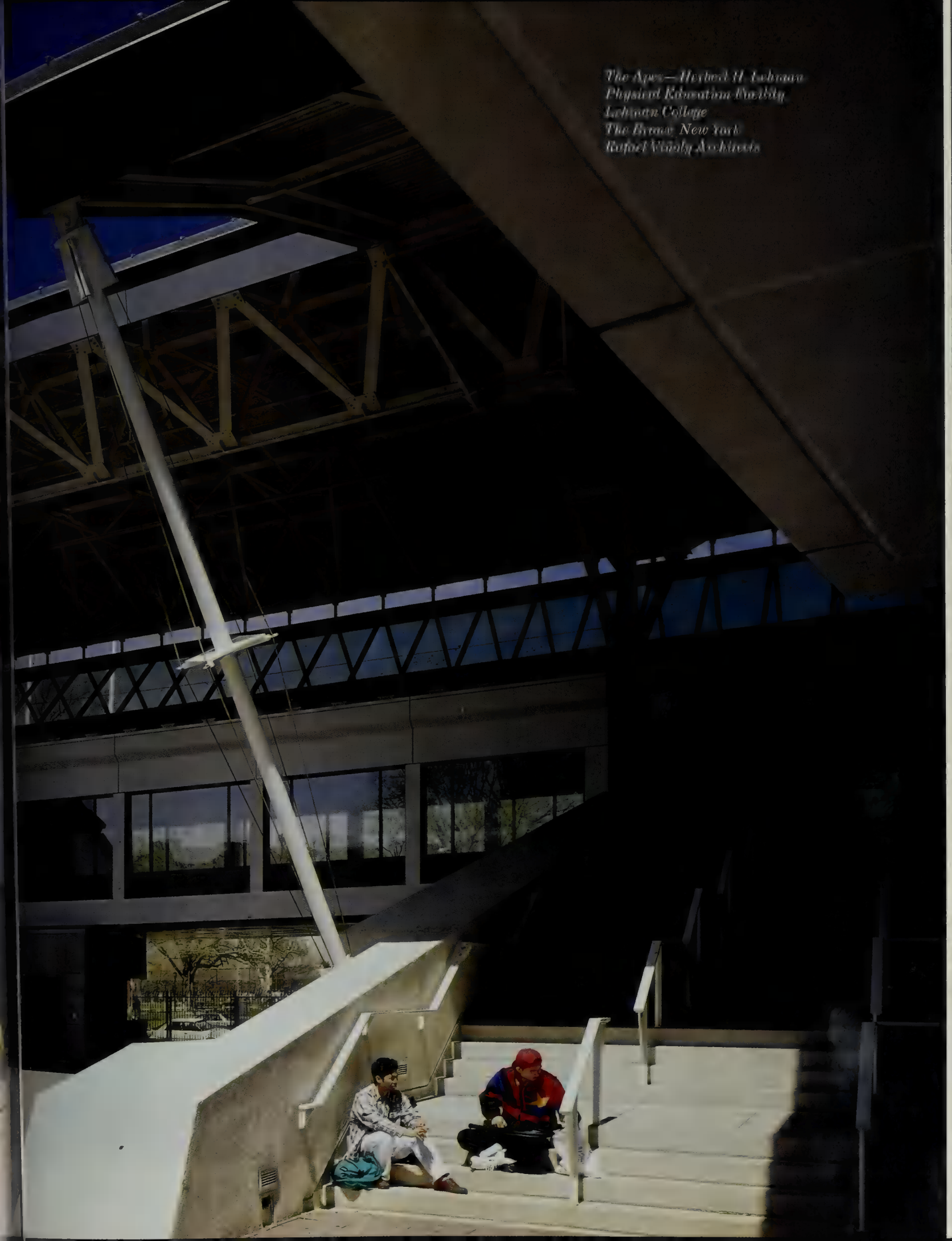
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Photos this page courtesy ACOG

Stretched to the Limit

Rafael Viñoly flexes his structural muscles at a new gymnasium for Lehman College.





The Apex—Herbert H. Lehman
Physical Education Facility
Lehman College
The Bronx, New York
Rafael Viñoly Architects

The students of Lehman College, part of the City University of New York, held a competition to name their new gymnasium and the winning entry was "The Apex." Rafael Viñoly Architects, designers of the building, couldn't agree more. In addition to marking the culmination of a five-year effort to improve the College's physical-education facilities, previously housed in a Neo-Gothic structure in the center of a motley campus that includes buildings by Marcel Breuer and Harrison and Abramovitz, the $40-million gym also provides an appropriately grand conclusion to the tree-lined College Walk, which bisects the 30-acre school. Initially asked to pack the 165,000-square-foot facility into a smaller site at the northeast corner of campus, the architects pointed to an adjacent vacant lot and argued for a longer, low-slung structure that would also give built form to the north perimeter, where the College and the Bronx meet.

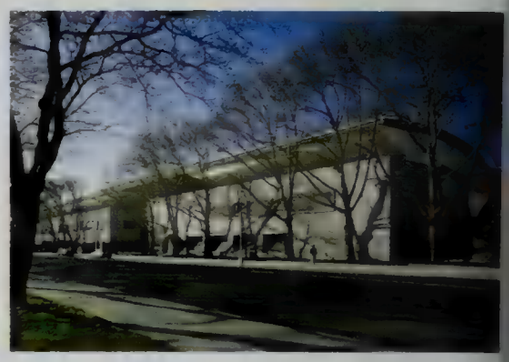
Not only does the 608-foot-long structure define the border between town and gown, it also creates a focused, and easy-to-supervise, point of entry: a courtyard covered by a bridge-like trophy gallery links two uneven wings and incorporates a campus security office where College Walk and the building intersect. Aware that these days an up-to-date gym is as much of a draw to prospective students as a well-stocked library, Viñoly and his team set out to create a memorable sign of athletic prowess.

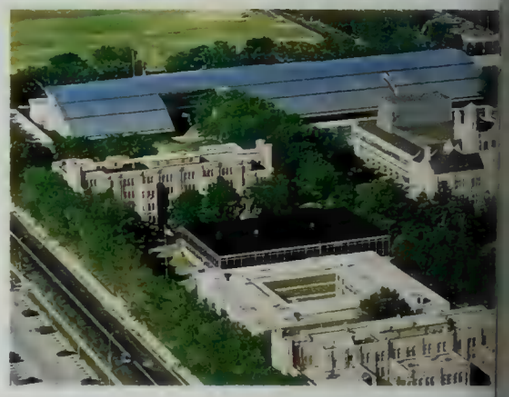
Viñoly calls the carved out plaza the "mouth piece." It juts out toward the College green. Like a section through the building, this open jaw reveals the structural system: exposed steel trusses atop reinforced-concrete foundations. The architects used painted metal panels as infill between windows and precast concrete walls. Projecting an overall image of tensile strength is the stainless-steel-clad roof that steps down toward the central campus, creating clerestory windows, which admit light into interior spaces. Says Viñoly of the building's hill-like profile: "It's more like geography than architecture." Explains project architect Jay Bargmann of the seemingly flashy choice of material: "An initial scheme with a painted steel roof came in under budget, so we were able to use the mill-finished stainless."

Access to gym facilities is via a main entrance located in the covered courtyard. Opposite, a monumental exterior stair leads directly to second-floor offices and classrooms and doubles as outdoor bleachers in good weather (previous pages). Connected below grade by locker rooms, one wing contains an Olympic-size swimming pool and an all-purpose gym with a mezzanine running track, while the other wing houses the main gym with NCAA regulation-approved basketball and tennis courts and moveable bleachers. Says Bargmann: "Once we figured out that we could fit all three of the main spaces in a row on either side of College Walk, we knew we could make this scheme work." The architects took advantage of a natural depression in grade, placing the outdoor tennis courts behind the swimming pool, sheltering them from wind and reducing their prominence on campus. Arranged off the main corridor are aerobics, dance, gymnastics, and weight-training rooms with views of the street.

Although the gym has become a focal point of activity on campus, it is [illegible] number of the community. Facilities are used by the [illegible] regular basis and for special events, including the New [illegible] Olympics for the disabled. Viñoly is also proud of a [illegible] ability. The architect, whose active interna- [illegible] shuttling between offices in New York City [illegible] I'm particularly happy about is that you [illegible]

Karen D. Stein

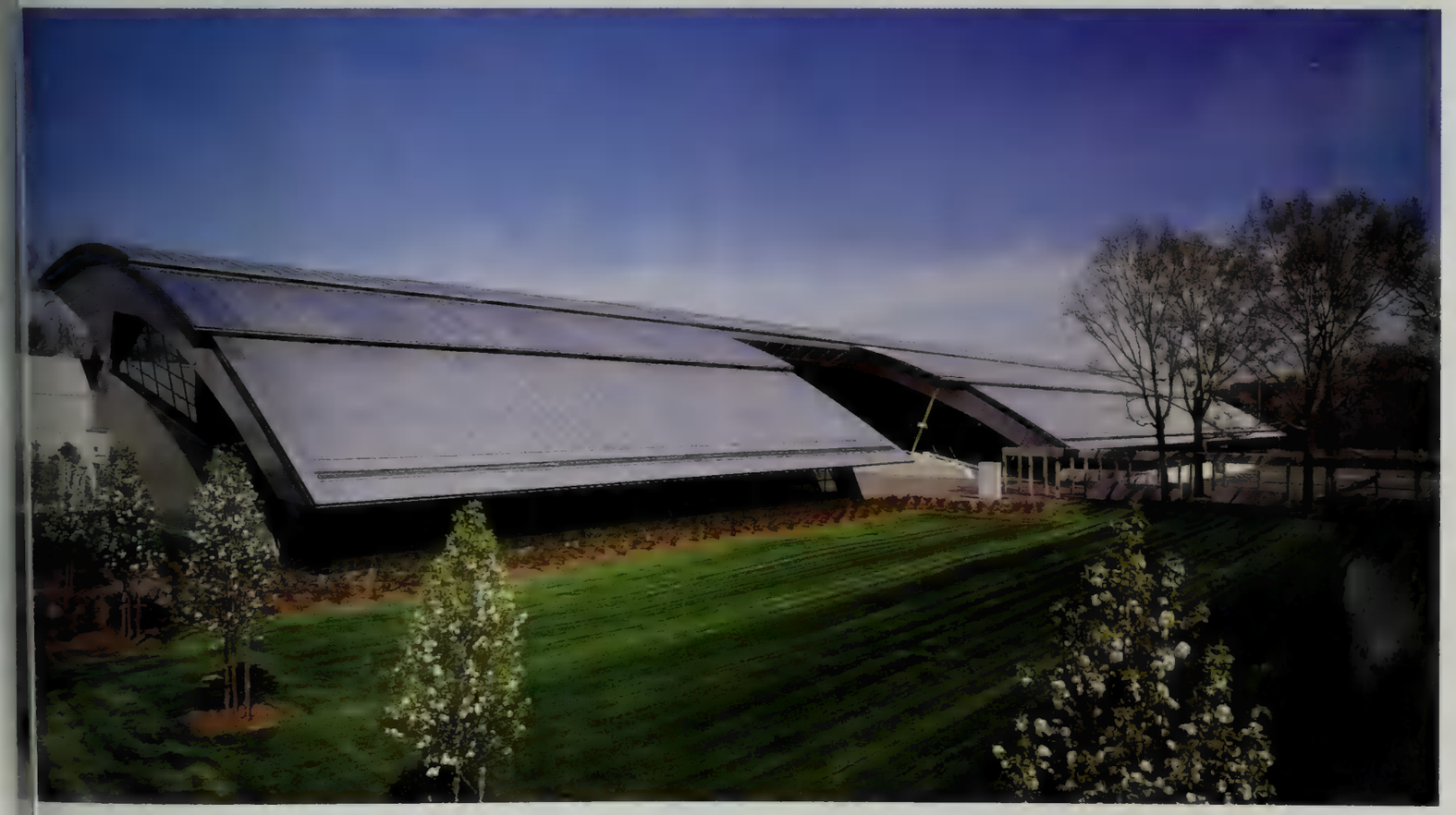


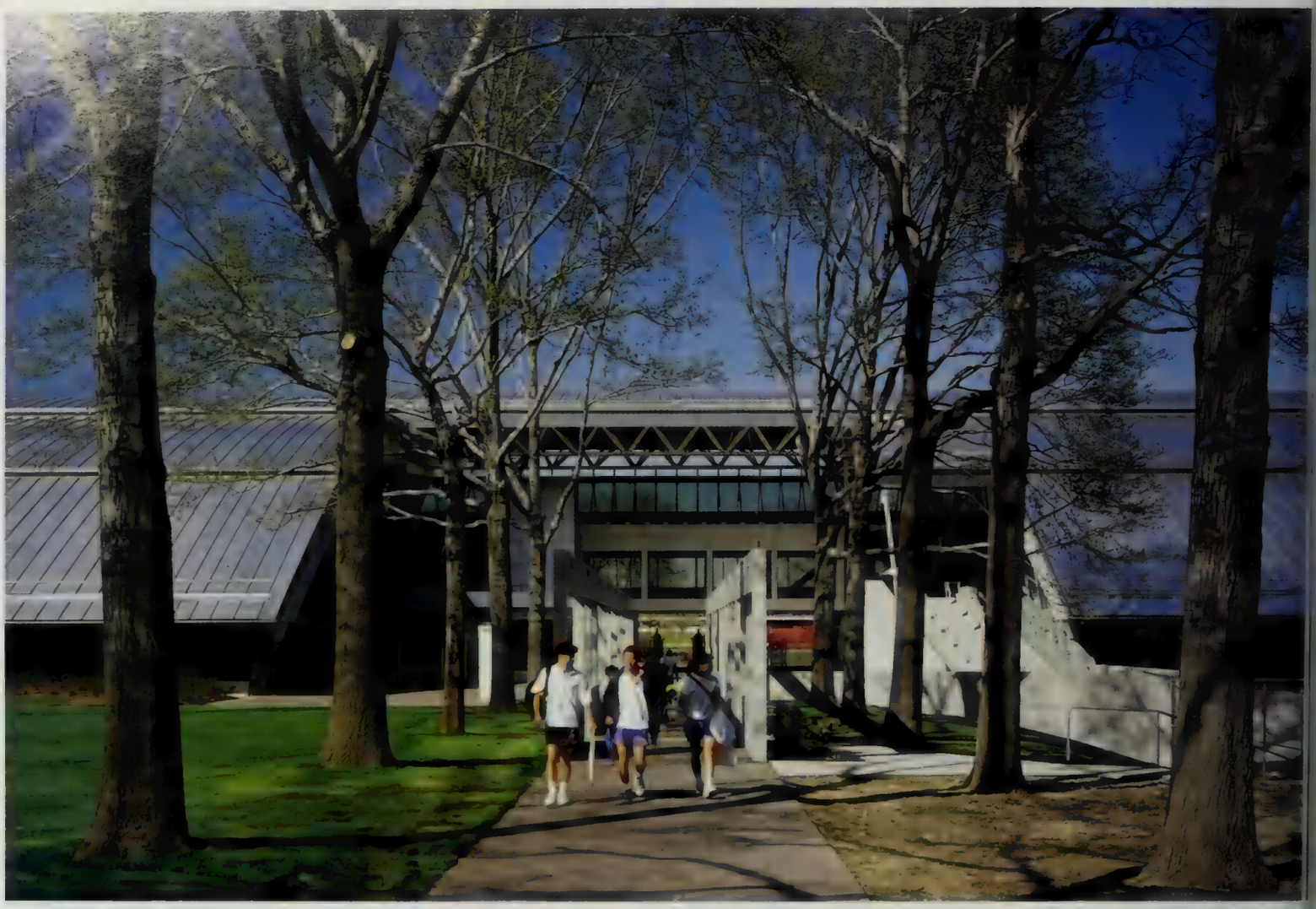


The Lehman College gym gives built form to the edge of the campus, making a transition between playing fields to the north and an assortment of College buildings arrayed along the central tree-lined axis of College Walk to the south (aerial photograph above). Subway tracks and major traffic arteries flank the east and west sides of the campus. Along the streetfront (top), the 608-foot-long precast concrete facade acts as a barrier, focusing entry through a partially covered courtyard, which is monitored by a security station tucked inside the gym. Acting as a fifth wall, the stainless-steel roof steps down toward the campus green, cantilevering over the structure to screen the pool and gym areas from direct sunlight and creating shaded outdoor seating areas with views in interior spaces (opposite). Artist Jackie Ferrara's concrete-block pergola reinforces the path through the building.

©Jeff Goldberg/ESTO photos

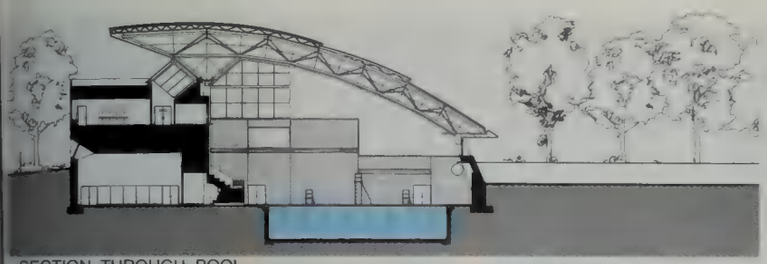




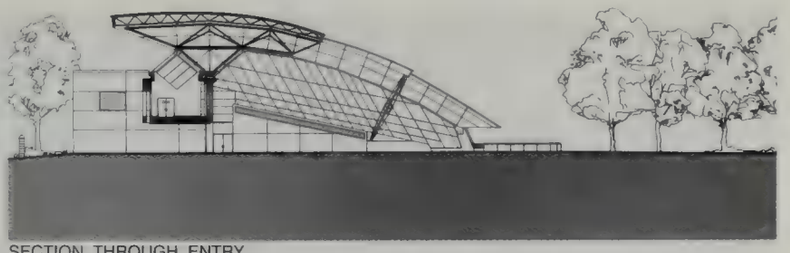




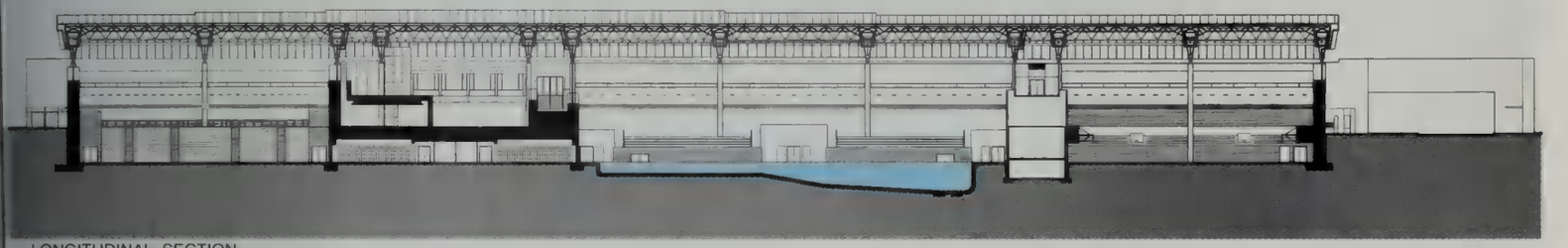




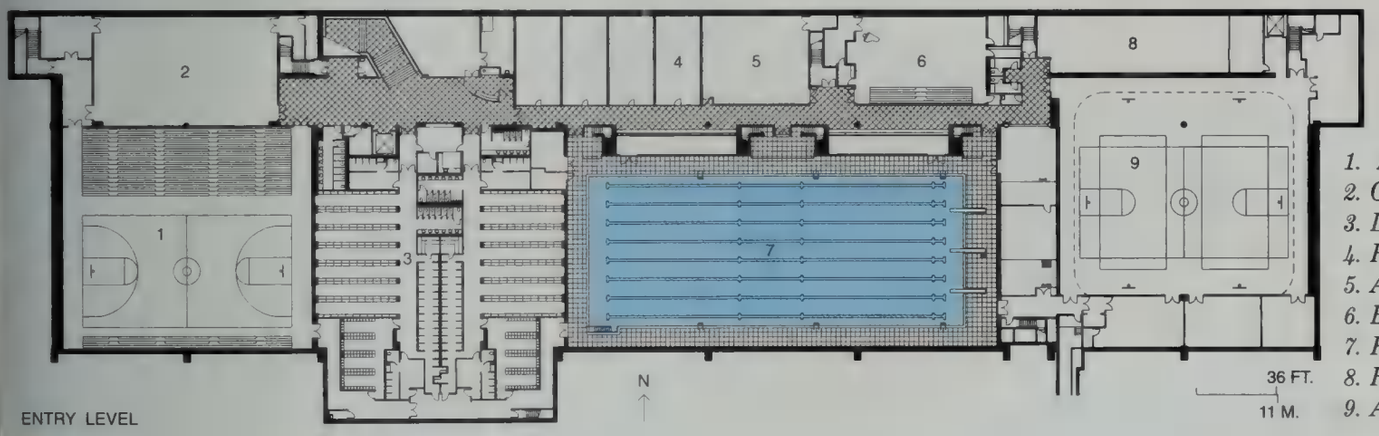
SECTION THROUGH POOL



SECTION THROUGH ENTRY



LONGITUDINAL SECTION



ENTRY LEVEL

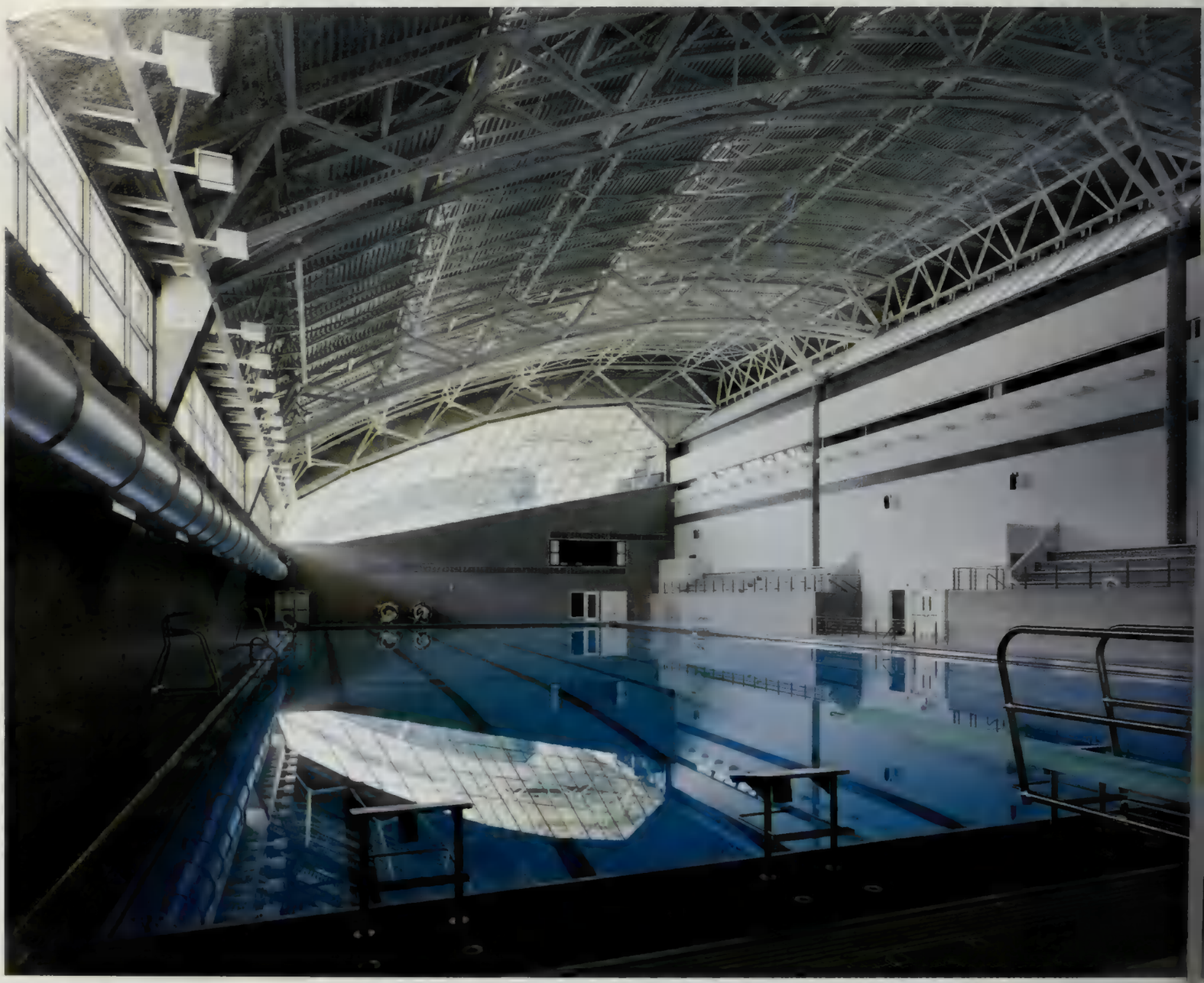
1. *Main gym*
2. *Gymnastics*
3. *Locker room*
4. *Racquetball*
5. *Aerobics*
6. *Ballet*
7. *Pool*
8. *Fitness*
9. *Auxiliary gym*

o Close

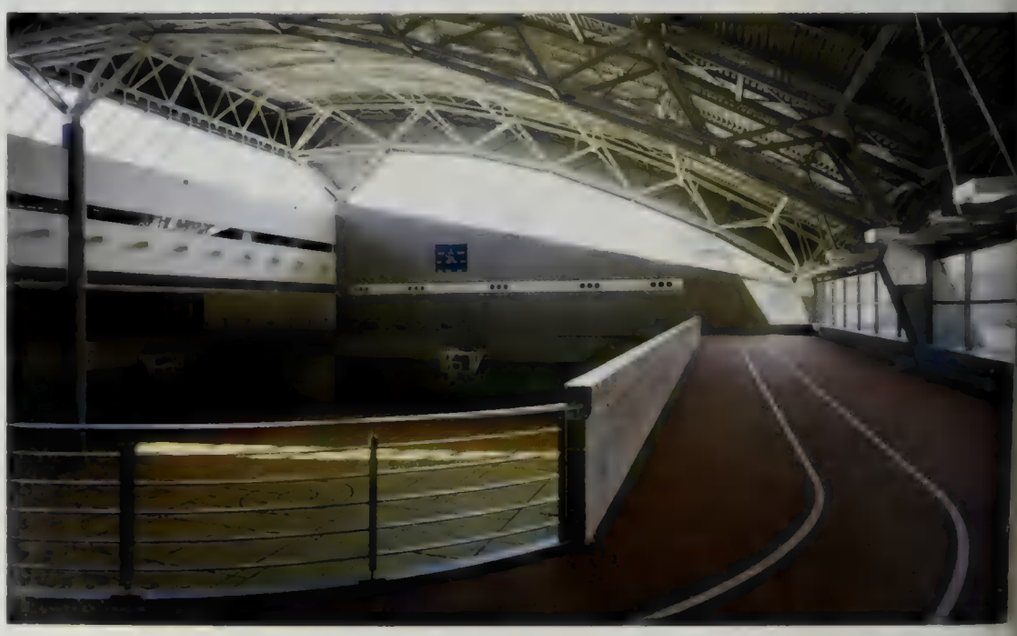
ilding a gateway. Perpendicular to the hman gym, the original site intended for e structure was a smaller parcel at the rtheast corner of the campus, which, cording to project architect Jay rgmann, "would have forced a high-rise lution." After helping to establish the llege's program, the architects were able convince the powers-that-be to appropri- an adjacent parcel along the northern ge of the campus, permitting a longer, low- ng structure, while maintaining a row of ture Linden trees to the north and a minent campus green used for com- ncement exercises to the south. The hitects shoehorned an NCAA-approved n on one side of College Walk and an mpic-sized swimming pool and an auxil- y gym on the other (plan above), nforcing the central pedestrian artery of campus, which is also lined with trees. hough the barrack-like nursing school l occupies the west corner, a disappoint- to Rafael Viñoly, who says "we misread intention to [immediately] condemn it," n the street it's obscured by the gym.

Steel-reinforced concrete foundations support a superstructure of exposed steel trusses spanning 101 feet. (The trusses were assembled on the ground and then hoisted into place.) The stainless-steel cladding glimmers in the sunlight and virtually disappears into gray skies, a changeable fifth face for the building. On the south side, the roof extends 10 feet over the structure, softening the effects of direct sunlight on the swimming pool and two gyms located one floor below grade (sections top). The cantilever also creates a covered seating area overlooking the College green. Clerestories in the roof provide additional daylight. On the second floor, a top-lit hallway is flanked by rows of offices and classrooms (section middle); offices overlook recreation areas and have distant views of playing fields. Spanning College Walk is the trophy room (opening spread), still vacant, which will also be used for special events.

Because of ADA requirements, all Lehman gym levels are accessible by elevator, and the swimming pool has both an access ramp and a submersible lift. The outdoor tennis courts, located to the south of the building in a depression that predates the Viñoly design, are also accessible by ramp. For high-pressure steam and chilled water, the facility is connected by an underground utility link to the campus central plant. To prevent the smell of chlorine from filtering beyond the swimming pool, the architects subtly depressurized the pool area so that more air is exhausted outdoors than supplied.



A moveable bulkhead can separate the Olympic-size competition pool into two training/recreation pools (top). Direct south light is screened by a 10-foot overhang and windows overlooking the entry courtyard admit western light. Although the architects originally designed the roof to be retractable, that feature was cut from the final $40-million scheme. The NCAA-approved gym occupies the west side of the asymmetrical bar (opposite top), while the pool and the auxiliary gym with a mezzanine running track (left and opposite bottom) are tucked on the longer east side. Quartz [illegible] are used throughout the







Credits

The Apex—Herbert H. Lehman Physical Education Facility; The Bronx, New York

Owner: *Dormitory Authority of the State of New York*

Architect: *Rafael Viñoly Architects—Rafael Viñoly, Jay Bargmann, Jackie Welsh, Donna Wax, Dennis Austin, project team*

Engineers: *Severud Associates (structural); Syska & Hennessy (mechanical/ electrical/lighting)*

Consultants: *Counsilman/Hunsaker & Associates, Recreation Design & Construction (pool); Shen Milsom & Wilke (acoustic); Robert Schwartz and Associates (specifications); Mueser Rutledge Consulting Engineers (foundation); Rolland/Towers (landscape)*

Construction Manager: *Lehrer McGovern Bovis*

Entertainment Drives Retail

By Donald Shillingburg

On March 28, 1994, a number of retailers announced the opening of new retail outlets in upstate New York, Ohio, and New Hampshire, but observers were hard-pressed to find the new stores. Shunning normal locations at the local mall or downtown, Spiegel, Inc. and seven other catalog companies have joined forces with Time-Warner to open up shop-on-cable-TV. Catalog 1, as the new network is called, has joined other networks like Home Shopping Club and QVC in hawking wares directly into their customers' homes. The network, which will offer products from Crate & Barrel, Nature Co., Neiman Marcus, Spiegel, The Sharper Image, and Williams-Sonoma, is expected to go national if the test succeeds.

The past 10 years have seen a burgeoning of new retail forms in unexpected places. Warehouse stores have popped up alongside highways and around traditional malls throughout the country. Urban Malls and themed "Festival Marketplaces," first invented in the late 1970s, have expanded and taken root in urban areas and historic buildings long ignored. Outlet Malls offer reduced prices on brand-name products to the thousands who often travel several hours in order to reach them. Most industry observers agree that during the past 10 years, retail has undergone a fundamental change.

Up until recently, the shopping mall dominated the retail market comfortably. Removed from urban ills, the shopping mall offered a private, automobile-oriented environment that alleviated the congestion of shopping in the town center, made it both safer and, with the enclosure of malls, comfortable through even the harshest of weather. By offering many of the commercial advantages of the city without all the headaches of getting there, the mall slowly bled the city dry of its retail commerce.

Developers soon realized that the mall could be a place of leisure as well: Victor Gruen, an early shopping mall designer, often recounted a Sunday visit he made to a shopping center with a number of department-store executives: they arrived to find the closed center filled with people who were window shopping. For middle-class Americans with more time on their hands and more money in their wallets, shopping became a major leisure activity.

Donald Shillingburg is an architectural historian on the staff of a New York-based architect.

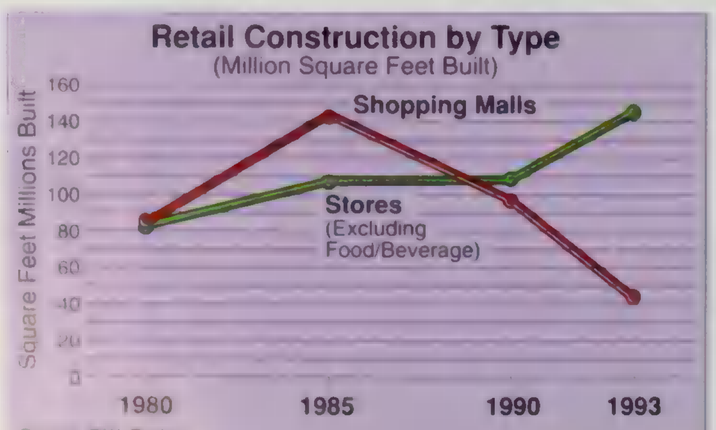
By 1980, after almost two and a half decades of constant building, the landscape became saturated with shopping malls. In order to continue building retail facilities, developers spawned new strategies for creating retail centers that would continue the success of the mall. Obeying Reilly's Law of Mall Attraction, they discovered that all other things being equal, Americans will go to the bigger of two malls if only for the marvel of size. Super-regional centers, including up to 200 stores and four or more anchors, could draw customers away in already heavily saturated areas. The "festival marketplace," first constructed in San Francisco and Boston, proved that anchors weren't necessary to draw huge crowds. Instead, developers mixed together high densities of restaurants and whimsical shops with refurbished historical buildings to create a new kind of urban place. The festival marketplace has the patina of the city's history, but is managed like a mall.

Electronic shopping vs. mall visit

Electronic home shopping has offered a venue for impulse shopping that is both cheaper and more convenient than a mall visit. A consumer can shop for goods while he or she is cooking dinner, doing chores, or working—one only needs a few seconds and a credit card in order to snatch up an attractive bauble. Since electronic home shopping is a relatively new player, it has not yet made a significant dent in the retail economy. Most people still associate the idea of electronic home-shopping with the image of cubic zirconia jewelry slowly rotating before an iridescent blue background. But electronic home-shopping businesses recorded $3 billion in sales last year. Although that is still only a drop in the $585-billion retail bucket, analysts anticipate significant growth over the next few years: last month Daniel J. Sweeney, vice chairman of a retail consulting division of Price Waterhouse, predicted that by the year 2000 video shopping would make fo[r] a $58-billion industry, or some 10 percent of all retail sales.

Industry observers expect that production values, quality of mercha[n]dise, and product range of home-shopping services will increase, especially as more ventures are launched. Home Shopping, in an eff[ort] to compete with entertainment television, is increasingly mixing ent[er]tainment with shopping. Already, QVC has celebrities pitching their

Store construction has in the past five years outstripped shopping mall construction (see chart). Shopping malls have [illegible], and few new [illegible]. Main activity [illegible]



Kings Crossing Town Center
Kingswood, Texas
This community shopping cent[er] by architects Palmer Brook Schooley serves a post-war suburban development near Houston. The design is a mode[rn] reinterpretation of the traditional main streets and court-house squares that remain throughout Texas. False fronts and covered sidewalks face the street.

Facing competition from video shopping and the entertainment craze, developers and their architects invent novel ways to lure jaded customers.

avorite items: Joan Rivers hosts Can We Shop, a home-shopping talk how; and Infomercial product-hawkers like Tony Robbins and Susan owter have climbed the celebrity ladder to national fame. Eugene hristiansen, of Christiansen and Cummings, a New York retail nalysis firm, expects an increasing confluence between consumption nd entertainment. "Entertainment has become almost fully inte- rated into all aspects of our lives," he observes. "There is hardly a inute when you're awake that you're not being touched by some rm of entertainment. People have come to expect to be entertained. n the minds of American consumers, the pursuit of happiness has eveloped into the right of entertainment."

lot all is whimsy

ut not all shopping is whimsy. Developers have also been quick to uild new stores where the value-oriented consumer can find necessi- es. Superstores, also known as warehouse stores, discount stores, or ategory-killers," because of their success at eliminating competi- on, offer a simple formula for retail success. Eschewing all retail mp and circumstance, they display a gigantic selection of goods ithin a certain category and offer them at a lower price. A mixture volume, cheap land rents, and efficient storage and distribution ethods help these retailers to keep overhead to a bare minimum.

r instance, Home Depot, a home-improvement retailer, easily lipses even the largest local competition because it can simply out- ck them. Even earlier home-improvement supermarkets equipped r a smaller-scale era can't compete. "First you go to the hardware re and they don't have it, then you go to Channel or Rickel's and ey don't have it, and then you go to Home Depot where they have it four varieties. After a while, you don't bother going anywhere e," a Home Depot customer remarked.

would seem that there is little role for innovative design here, but me architects have begun to tackle the problem. Kevin Daly of dy, Genick of Santa Monica, California, has proposed a new system organizing the Millwork area (the department which displays and ls manufactured windows, doors, etc.) at California-based Home se Warehouse (see next pages).

ith such tough competitors on the market, it isn't surprising that shopping-mall developers are nervous. For many people, traditional shopping malls are losing their luster. "The mall in Maine and the mall in Texas look the same," explains Toni Alexander, president of Intercommunications, Inc., "They're just uninspiring boxes." Malls have always succeeded despite their homogeneity: the glamour and excitement of acquisition was enough. But a recent *New York Times* article noted that malls do 70 to 80 percent of their business around the year-end holiday season, whereas superstores and home shopping sales are spread throughout the year. Already, some developers have seen the future of shopping malls, and it is the strip. Seven Corners Center in Washington, D.C. has been converted from a covered mall back into the outdoor strip. Shopper's World in Framingham, Massachusetts, the country's second-oldest regional shopping center (opened in 1951), is due to be replaced by a strip mall.

Enter: "entertainment"

Methods of integrating "entertainment" into retail range from simple gimmicks to gigantic themed environments. Music stores like Tower Records and HMV Record Stores are offering music samples. Listening stations set up throughout the store allow the customer to come in, browse, and listen to the newest CD's. Many retailers have video monitors that play tape loops very similar to television advertisements. Usually strategically located to draw the customer through the store, they act as magnets.

In perhaps one of the most fascinating combinations of retail, entertainment, and merchandising, major entertainment companies like Disney, Sony, and Time-Warner have opened up retail stores where they sell a wide range of brand-related paraphernalia. Non-entertainment companies like Nike have also opened up stores which, although they are expected to succeed commercially, serve more as dramatic brand advertisements. By mixing merchandise with an entertaining experience, the companies are able to make a much stronger advertising impression on the customer. Although you may buy nothing in the store, you are more likely to buy that brand elsewhere.

Although shopping malls have always had restaurants, they were not intended to be draws in and of themselves. They functioned much like the old Woolworth's lunch counter. Within the past 10 years, however, malls have been adding food courts and restaurants because they





© erald Moorehead photo

have realized that they act as small magnets. Some malls have upgraded amenities available to visitors. Malls like Tysons Corner outside of Washington, D.C. offer Concierge desks and stroller rentals.

In expanding the entertainment role of the entire mall, movie theaters have also become a staple. Now most theaters offer at least three screens, and gigantic 10- to 15- theater complexes are increasingly common. With creative scheduling, a "Movie-plex" can easily offer up to 20 movies at once. Developers are discovering that these theaters can act as significant anchors.

The Mega-mall is the logical extension of this broadening of the mall's character. Based on the philosophy that a critical mass of retail, entertainment, and food will attract people from all over the world, developers put together the Mall of America in Minneapolis.

For the designers of the Mall of America, the esthetics of the mall were not as interesting as the multitude of activities. "We wanted to create an environment which was familiar to people," explained Joe Talentino, who oversaw design and construction of the center for Melvin Simon Associates. "We didn't want to make any radical design statement, because we thought that the synergy of the mixed uses would bring people in, not the architecture." Joe Talentino and his Mall of America partner, Bob Horn, have struck out on their own to develop Heartland America, an entertainment and shopping complex outside Branson, Missouri, which will offer a mix of country music and retail shopping.

Other developers have taken the mall space itself and fashioned it into an object of entertainment. Throughout the century, themed attractions have become increasingly popular. One need only consider the popularity of Disneyland, opened in 1955, and its successors to understand the power of a contrived fantasy experience. The fantasy experience has always been a retail experience as well. Throughout the park, souvenirs are constantly offered for sale—almost as momentos of your fantasy souvenir-shopping experience. In Disney's case, though, there are gates at the edge of the park where one has to return to the real world—the borders between fantasy and reality remain in place. But in 1990, Steve Wynn finally brought the fantasy out of the park and into the city with his Mirage Casino Hotel in Las Vegas. With a volcano that erupts every evening, the Mirage presents guests with a fully simulated indoor tropical oasis. Running consistently throughout the hotel, the casino requires a full-time staff of 60 gardeners to maintain the effect. Four fully themed hotels have been opened since, including Luxor, Excelsior, the MGM Grand, and Treasure Island, while older casinos have refurbished and "re-themed" themselves in order to compete. Julie Brinkerhof, the landscape architect who helped design the Mirage and Treasure Island, explains, "People want to experience exciting things without the fear of being hurt. They like to get lost safely."

Gods that talk

Sheldon Gordon, a shopping mall developer, was quick to move the idea into retail. He brought Melvin Simon on board and convinced Henry Gluck of Caesar's Palace that a shopping venue should be added onto the casino. The Forum Shops, fully clothed in an imitated Roman architecture, were opened in 1992. In addition to faux-marble coated interiors, amenities include a fountain with animatronic gods that speak to passers-by, and an illusionistic ceiling that runs from day to night within every half hour. For Terry Dougall, who designed the interior, the space needed to be theatrical enough to compete with fantasies on film. "Everything we do is theater—good theater has an appeal far stronger than other types of design: it allows us to escape from our responsibilities as adults and find ourselves in a fantasy world." (See following pages.)

By keeping people in a state of wonder, the Forum Shops have become a smashing commercial success—precisely because of the space. "It's like nothing else you've ever seen before. It's beyond description," explains Mark Schoifet of the International Council of Shopping Centers. "People are drawn to it. They can't believe their eyes." And such amazement doesn't keep people from opening their wallets; Forum Shops sold an average of $900 of merchandise per square foot last year, a number almost unheard of in North America, where $400 to 500 per square foot is considered an outstanding performance.

Meanwhile, developers in Los Angeles have chosen a different object of fantasy—the City of Angels itself. In 1993, MCA opened Universal CityWalk—a three-block long mall that extends from the gates of the Universal Studios Tour and Theme park to an 18-screen Cineplex Odeon. As one winds along the 1,500 feet from one end to the next, many of the familiar mall stores, such as Sam Goody and the Nature Company, are in evidence. Like other malls, CityWalk has included space for community amenities like a UCLA extension and the Museum of Neon Art. But this is far from the typical mall—the architecture of the space isn't rendered in the stumbling, hushed tones of the typical mall interior. This is organized chaos—almost a visual riot crowding in.

The architecture of CityWalk seems so familiar that visitors (and

Incredible Universe
Miami, Florida
The interior of this electronics superstore, designed by Charles Hodges & Associates, is filled with a huge variety of wealth [illegible]



IMA Universe photo

Project for Home Base
Warehouse
San Diego and Orange
Counties, California
Architects Daly, Genik have proposed to Home Base, a chain of home improvement warehouses, a new generation of special-order areas called InfoMedia Centers. Translucent polycarbonate sheets (model photo, right) make up a cheap and flexible system that allows store managers to

architecture critics) are tempted to pick out familiar Los Angeles neighborhoods—Venice, Santa Monica, Hollywood Boulevard. But the architects didn't intend to imitate any specific streets or buildings. "We went through Los Angeles and looked at vernacular store fronts," explains Richard Orne, the project architect with The Jerde Partnership. "We looked at the Los Angeles streets— which are too wide and spatially incoherent. We designed store fronts with the great L.A. vernacular architecture in our heads, made it one and half times bigger, exaggerated it, and put it in a pedestrian environment so people could enjoy it." (See following pages.)

Cheap urbanism?

Which is exactly what has critics up in arms. They have accused The Jerde Partnership of trying to create a sort of cheap, plastic urbanism. Of course, MCA executives were quick to claim they had made a "safe" L.A.—a particularly volatile claim considering the barely healed scar of the 1992 riots where fires and looting were widespread. Further furor erupted when MCA executives delayed the opening of the movie "Poetic Justice" because they feared violence. Immediately people began to pose the question: Is the mall a public space? Because of the rising fear of crime and the decline of cities, truly public space—non-exclusive, democratic, "free" space—is becoming rarer and rarer. Critics are concerned that their visions of a "private" urbanism threatens the diversity of urban life.

Jon Jerde, the force behind The Jerde Partnership, is acutely aware of this problem. He is fascinated by resurrecting the town center as a communal space. "Because the mall focuses on only one part of the communal experience—commerce—it cannot begin to approach the vibrancy of the town center. Communal space integrates several parallel functions—socializing, commerce, civic activities, and a sense of collective identity." In designing his shopping malls, Jerde wants to create spaces that can foster those activities. He hopes people will come to his malls just to enjoy them. To do that, you need more variety—"I keep trying to enrich the menu, adding churches, libraries, museums, houses." CityWalk as it stands now is only a piece of a larger whole—a complex of businesses, entertainment, offices, and production studios that is in development. The existing mall is merely a stepping stone towards a larger idea.

The themed space, as at the Forum Shops, is a spectacle to behold, but how much spectacle can we sustain? Will the local shopping mall be fully made over into a themed village? The science of mall demographics suggests that they will remain rare—usually in places where they can attract large amounts of occasional visitors. CityWalk, which straddles the fence between themed entertainment mall and city street, offers a more comfortable model. Many developers have begun to see the vitality of the urban street as profitable. They are commissioning unique designs with varied storefronts that relate to the local architecture. Palmer Brook Schooley's Kings Crossing Town Center outside Houston evokes the Old West with its varied store-fronts (see previous pages).

Real communal space is critical

By mixing uses, creating architectural variety and dissonance, these shopping centers look more like the city. The facades cover up rather conventional big boxes; it is the space between them that has changed. Although developments in electronic media have diminished its importance, a physically real communal space remains vital to any community. The mall offers an opportunity for people to be around other people, to bump into friends, and meet strangers. It is a place to watch others and be on display. Because there are few other outlets in the suburbs, the mall's metaphor of urban street has become altogether too compelling; many now think of the mall as if it were a public space.

Many communities have demanded that the mall offer more public amenities. Municipalities usually negotiate a tax break for donated space in shopping centers, thereby opening up new spaces. The Mall of America in Minneapolis, for instance, has opened up a school which offers high-school classes and college-extension classrooms. Cambridgeside Galleria outside of Boston and the Edgemar mall in Santa Monica, California, include museums intended to attract visitors to the mall as well as to expand its cultural reach.

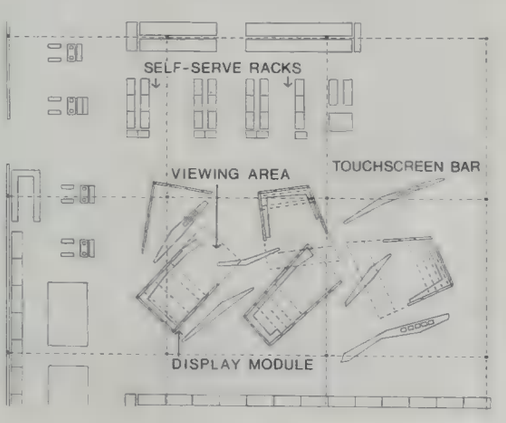
But the Rouse Company and other developers have taken this a step further. The mall at Plymouth Meeting, Pennsylvania, includes a church which caters to the culture of the mall. Rouse's marketing strategy targets the family. So far it has had a significant amount of success: while visitors to most malls visit once every two weeks, visitors to the mall at Plymouth Meeting go to the mall an average of once a week.

Thirty years after Gruen offered Southdale, the first enclosed shopping mall, as a utopia, it remains an ersatz urban solution. As a safe, clean, and culturally sanitized space, it is nothing but a hollow city. But the mall can no longer survive as a manically controlled setting—that much is certain. Changing economic tides may help to create a more diverse space, both from the viewpoints of program and design. But developers and their architects must use caution—genuine urbanism cannot be packaged and sold by the fantasy industry. It must be grown carefully and from the ground up. ■

...stantly update displays. Con... ...ned in the scheme is a ...nputer information system to ...ent customers overwhelmed ... the sheer mass of merchan... ...e. Individual viewing rooms ... linked through "video-bars," ... banks of touch-screen moni... ...s which become shoppers' ... des. The InfoMedia Center is ... interactive lab where the ...lic can tinker with products ... services.



© Daly, Genik photo



Sense of Place, Hollywood Style

Universal CityWalk, Los Angeles, California
The Jerde Partnership, Architect

Every year, thousands of tourists come to Universal Studios for the famous Studio Tour. From all over the country and the world (15 - 25,000 visitors daily), they come to see a "behind the scenes" vision of the two-dimensional world of film and television.

Beyond the gates, executives have begun to build a complex called Universal City intended to house a shopping mall, movie theaters, production studios, and executive offices. The first phase of this project is CityWalk, a 1,500-foot-long retail shopping street that forms the spine of the project, connecting the entrance of the Universal Studios Theme Park with an 18-screen Cineplex Odeon and the Universal Amphitheater, an outdoor concert venue. Most tourists use CityWalk as a sort of staging area as they wander from the parking garage to the theme park. Residents of Los Angeles also come to use the theater, shop, or stroll down the pathway, typically from 5 o'clock to about 11, at which time teen-age groups take over until about 2 in the morning.

For Jon Jerde of the Jerde Partnership, the important part of designing CityWalk was the space inside. "It is like designing experience," he explains. "People enjoy the changing spaces, the strong geometric qualities—it is a sequential plan of orchestrated events." Unlike most malls, the architecture is not a solid scheme of hovering masses, but resembles an urban chaos. The pathway widens, then contracts, and explodes into a gigantic open space before narrowing again. Like a traditional street, the mall appears to be hemmed in by a series of individual adjoining buildings. "It is a sort of graphic interpretation of Los Angeles roadside architecture," explains Richard Orne, the project architect. Although the facades are a reflection of Los Angeles vernacular buildings, in this world of film they are larger than life—one and a half times, in fact. In an added attempt to produce an aura of realism, candy wrappers were embedded into the floor tiles.

[illegible] a layer that hides many [illegible] was made up of 12 [illegible] and some already existed [illegible] more urban [illegible] a process [illegible] Many design-

ers combine their individual visions—not under the control of a single grand idea, but as a series of juxtaposed ideas. "It's rather like choral singing," Jerde explains, "there is a director, but each voice has a different tenor and flavor." At various stages of the project, they tried to involve other architects, not always successfully. Jerde left open spaces for each of these buildings, and as each deal fell through, they filled the space with one of their own buildings. But shadows and remnants of the unbuilt designs remain—the uncovered geodesic dome at the central court, for example, was part of a S.I.T.E. design for a "Landscape Oasis" that was never realized.

Jerde realized, however, that it could add voices by letting each store design its own front. It created a series of guidelines within which the store designers could work. "It was hard," recounts Orne, "because we didn't have too much esthetic control over many of the store designs." As a result, the space is filled with disparate images. There is a restaurant complete with a beach and an Aldo Rossi-esque lighthouse. A frozen yogurt store called Hollywood Freezway has an upside-down car as an awning.

In short, The Jerde Partnership's hands-off method is more akin to urban planning than shopping mall design. The hope is that after 10 years, the architecture of the mall will have changed: successive tenants will have left their mark. Instead of the eternal newness of most malls, this one is supposed to age, to undergo the "patina of history."
D. S.

Credits
Universal CityWalk
Los Angeles, California
Owner: MCA Development Co.
Executive Architect: *Daniel, Mann Johnson and Mendenhall*
Design Architect: *The Jerde Partnership, Inc.— Jon Jerde, principal/ design; Bob Woelffer, principal/management; Richard Orne, associate-in-charge/design*
Consultants: *Ernest L. Wemple & Associates (landscape architecture); Imero Fiorentino Associoates (lighting); Olio (environmental graphics)*
General Contractor: *Ray Wilson Co.*

©Weldon Brewster photos



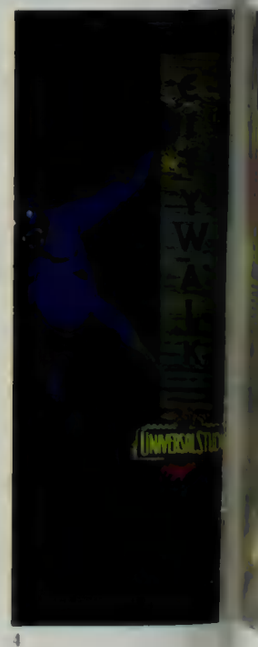
1



2



3



4

A pedestrian bridge spans the main walkway (1) as part of several levels of circulation. The entrance (2) comes with futuristic spires. Neon signs by Olio (3, 4) extend the cinematic character of Universal Studios through CityWalk. The palm-filled central court (5) is covered by a geodesic dome. Using neon signs and individual lighting, each store makes its own statement. The west walk district (6) and the central court (7) are transformed at night.

©Weldon Brewster photos







©Stephen Simpson

Roman Carnival

The Forum Shops, Las Vegas, Nevada
Dougall Design Associates, Inc.

The store fronts mimic archeological reconstructions of ancient Roman towns (1). From the escalator, shoppers can see the "Fountain of the Gods" in the distance (2, 4). The constantly changing sky of the Forum Shops creates an aura of excitement (3).

©Eric Fisse photos

On the approach to Caesar's Palace, visitors are given a choice between the casino entrance and the entrance to the Forum Shops. Most choose the casino. Perhaps they think, "I came to Las Vegas to gamble. I can shop at home whenever I want." But that doesn't last. When they enter the lobby of the casino, they are immediately given the chance to go shopping again. Looking through a two-story triumphal arch towards a fountain adorned with Roman architecture and statuary, they find a world they never could have imagined. Nothing is immediately familiar. The Roman motif is heavy: the fronts of the stores—over 70 specialty retailers and upscale restaurateurs—are adorned with temple-fronts and classical columns, as if summoned from Herculaneum. Fountains are adorned with marble statues and the sky is a brilliant blue with swirling clouds.



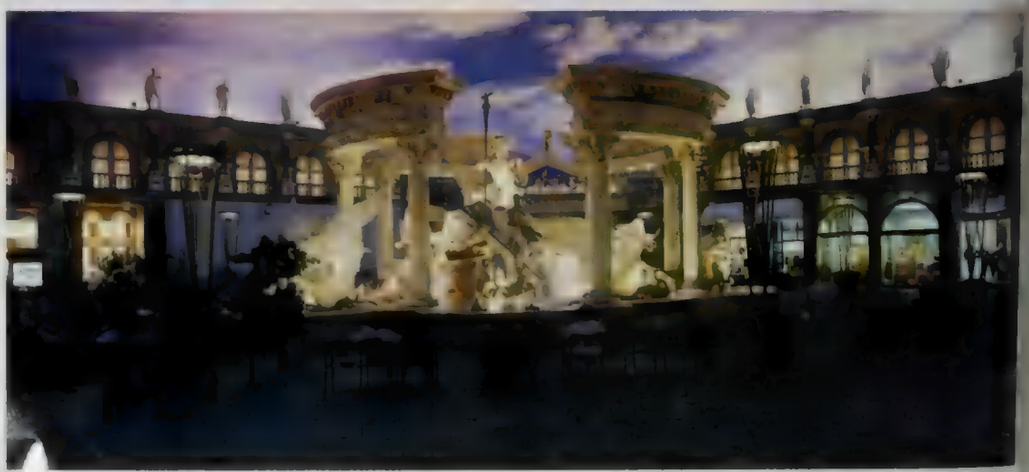
1

Within 20 minutes, however, the sky has turned pink and the sun sets brilliantly, pulling a slew of stars in behind it. A statue of Bacchus sits atop a fountain in a grand pose; suddenly he moves and greets you.


2


3

"This isn't great architecture," explains Terry Dougall, its designer, "It's great theater." Indeed, many of the effects were created by technologies developed for the film industry. Although the painting technique used on the ceiling dates back to the Renaissance, it was imported from Hollywood movie-making. Using computer-controlled lights, it goes through a cycle of dawn to dusk to dawn again in less than an hour. The talking statues were made with animatronics, the same technology that powers many Disneyland features. *D. S.*

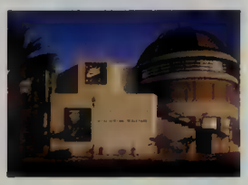

4

Credits

The Forum Shops
Las Vegas, Nevada
Joint Developers: *Melvin Simon & Associates, Inc. and The Gordon Company*
Architect: *Dougall Design Associates, Inc.*
Consultants: *Imero Fiorentino Associates (lighting), Creative Presentations, Inc. (animatronic character movement); Lasermedia (animation); Sky Art (painted sky*

Dougall Design Associates

Shoe Style



Nike Town, Orange County, California
Nike Image Design Group; Carmen Nordsten Igonda

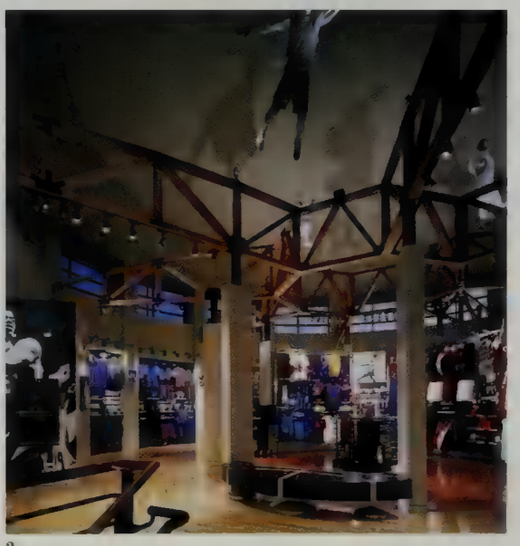
Life-size statues of Bo Jackson and PattieSue Plumer immediately suggest that this is no ordinary shoe store. The floor is a concrete sidewalk complete with manhole covers and the central space, known as the town square, is several stories high. In plain sight are Nike graphics, video monitors, and displays of sports memorabilia. The walls advance and recede, allowing glimpses of rooms beyond that coyly draw the customer into the store. With stairways, escalators and walkways scattered throughout the space, the store is certainly about walking, running, and getting from one place to the next. But where are the shoes?

Arrayed around the town square are 13 distinct pavilions, each of which offers a specific group of shoes and merchandise according to theme—basketball, golf, watersports, etc. The theme is carried through the displays, benches, and especially the floors. Scott Fedje, a senior project designer for Nike, described the design strategy: "We were looking for other ways of characterizing the places and we thought it would be a great idea to make a space where the customer could test-drive the shoe." The golf pavilion includes astroturf and a sand trap. The basketball pavilion has hardwood floors, the sound of squeaking sneakers, and a backboard. Going a step further, the outdoor shoes section, with a stone floor, is kept 15 degrees cooler than the rest of the store in order to evoke the outdoors. One has no doubt that the designers would have included the smell of mountain air. *D.S.*

Credits
Project: *Nike Town Orange County, California*
Owner: *Nike Inc.*
Architect: *Nike Image Design Group—John Farnum, creative director; Scott David Fedje, senior project designer; Richard Ader, senior display designer; Allan Colvin, senior graphic designer; Rebecca Kotch, senior visual merchandiser*
Architect of Record: *Carmen Nordsten Igonda*
General Contractor: *Birtcher Construction, Ltd.*



1



2



3

The domed exterior encloses a central space (1) whose pathways lure the shopper to all levels. From this space visitors get a glimpse of each pavilion (2). Statues of bicyclists descend from the rafters past pavilions with storefronts in the "town square" (3).

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company is still privately owned and operated by Mr. Craig's family from our corporate headquarters in Joplin.

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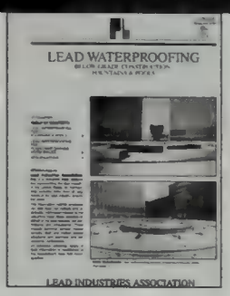
TAMKO
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Circle 16 on inquiry card

Product Literature/Plazas



00. Solutions guide
n eight-page color brochure exam-es drainage problems in foundation alls, retaining walls, bridge abut-ents and trench drains and offers lutions using Miradrain products. is line boasts a three-dimensional, gh-impact polymeric core and irafi filter fabric. Mirafi, Charlotte, C.



401. Lead waterproofing
The Lead Industries Association produced a four-page brochure that offers tips about lead waterproofing for fountains, pools, and areas above garage or room spaces. Includes advantages, case examples, cautions, and health and safety. A general specifications guide is included. Lead Industries Association, New York City.

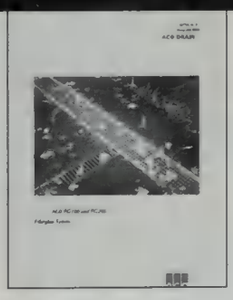




02. Systematic proofing
s company describes its systems roach to waterproofing plaza ks, sub-grade applications, and tected-membrane roofs in a color chure. Provides information about ee solutions for horizontal water-ofing and one for vertical walls. o discusses component parts. Sar-l, Canton, Mass.

403. Underground drainage
An eight-page color brochure looks at the various characteristics of this subsurface drainage matting. Covers multiple uses, installation for vertical and horizontal methods, specifications, flow capacity, vertical-wall performance, and product comparison. Akzo Industrial Systems Company, Asheville, N.C.





4 4. Deck protection
ide surfaces such as porches, op balconies, decks, and garages iven as examples for a PVC-brane waterproofing product. esses durability, maintenance, y, long service, installation ods, and product specifications. e for residential and commercial Ensurco Duradek, Blaine, Wash.

405. Sloping systems
A hydraulic fiberglass trench system is introduced in part of a 12-page catalog. The system uses 24 sloped and 4 neutral channels to maximize radiused bottom channel usage. A report about a pre-sloped system, brief descriptions of drain grates, and a chemical-resistance guide also are provided. ACO, Chardon, Ohio.
Continued on page 93

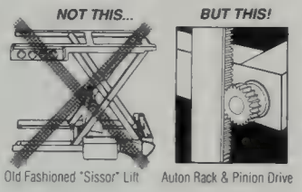
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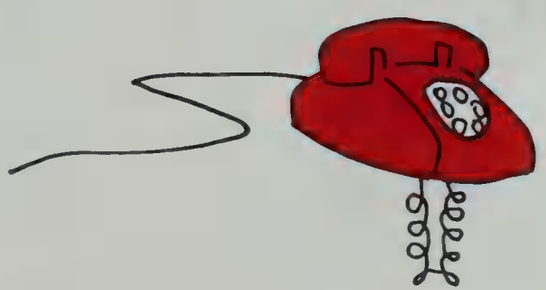
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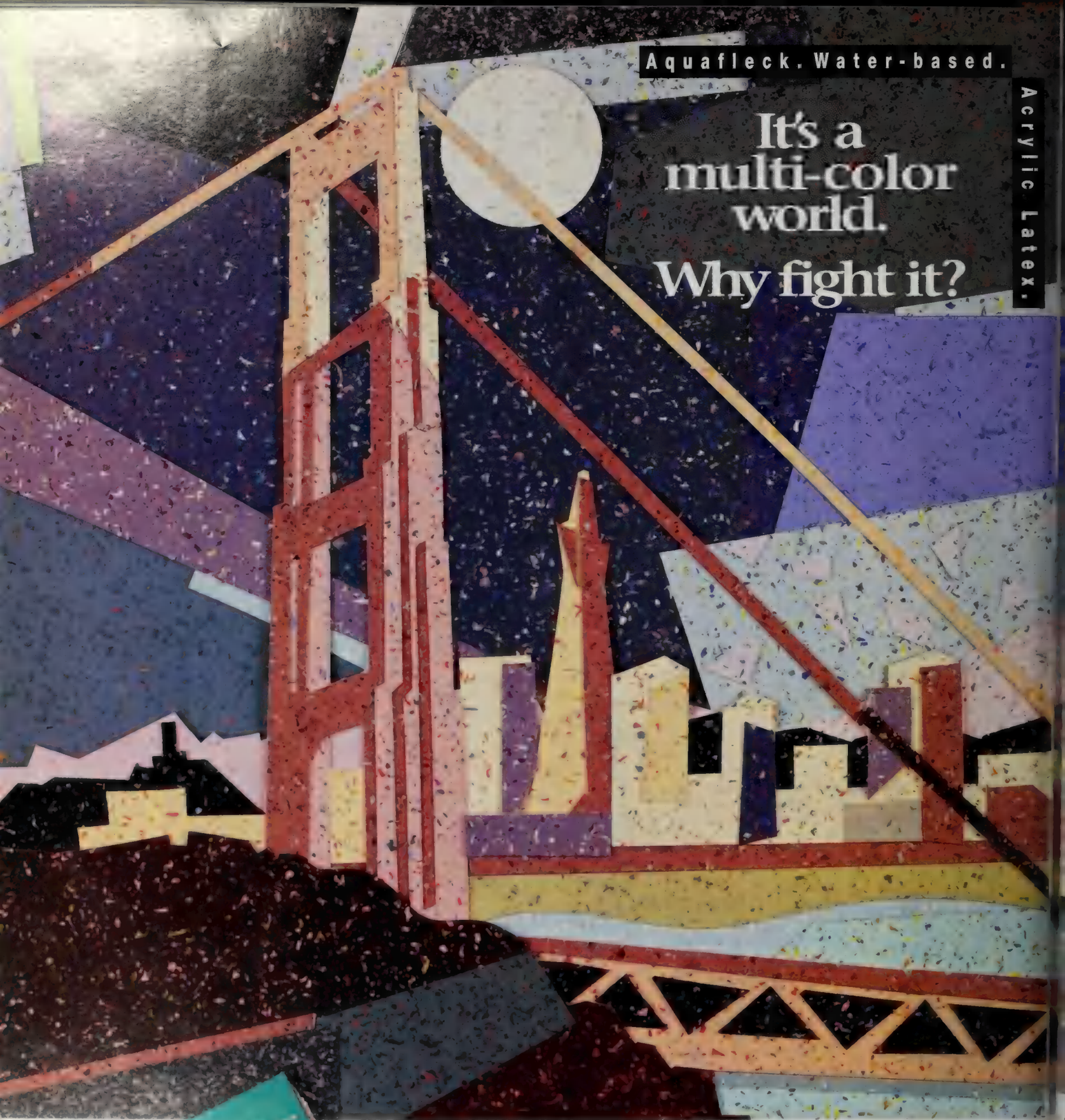
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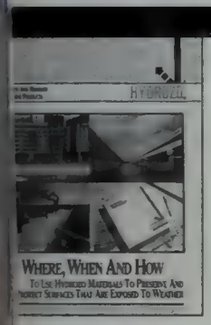
Circle 19 on inquiry card



06. Renovation products
ase examples from such places as
e Solomon R. Guggenheim Museum
New York accompany three-dimen-
onal diagrams of waterproofing
yers and descriptions of monolithic
embranes on four pages. Applicable
new and renovation roof and plaza-
ck waterproofing projects. Ameri-
n Hydrotech, Inc., Chicago.



407. Drainage composites
An eight-page brochure about Hydroduct describes drainage composites and their qualities, advantages, core properties, filter fabric properties, and applications. Two diagrams and photos illustrate vertical and horizontal installation of the product. Includes three drainage composite specifications. W. R. Grace & Co., Cambridge, Mass.



8. Concrete protectant
olorful folder contains "where,
en and how" information about
tecting concrete from the weather.
tches several conditions and needs
h product solutions. A two-page
chure also introduces a water-
ed penetrating sealer, while a
fold looks at additional sealers and
case studies. Hydrozo, Inc.,
coln, Neb.



409. Combat efflorescence
Details on a series of integral water repellent admixture systems are provided in this folder. Product details, benefits, features, and graphics explain the complete line. The same company also introduces a saponified natural-wood rosin as a high-quality, air-entraining admixture designed to prolong the life of concrete. Master Builders, Inc., Cleveland.



0. Paving materials
C plete with photos and diagrams,
th 16-page color catalog features a
fu ine of pre-cast concrete pavers,
p g systems, and pre-cast acces-
so s, such as treads, column covers,
ar ases. Also covers installation,
co finishes, and color swatches, all
of ich match another company line.
Te a Paving Products, Wausau, Wis.



411. Guiding the bricks
A four-page color brochure provides details about this paver-edge restraint system. Made of a PVC compound, it comes in rigid and flexible 10-foot-long sections for straight or curved edges and in industrial 15-foot-long sections. Includes guide specifications. Pave Tech, Inc. Bloomington, Minn.■

For more information, circle item numbers on Reader Service Card.

GIVE SMOKERS ROOM TO SMOKE
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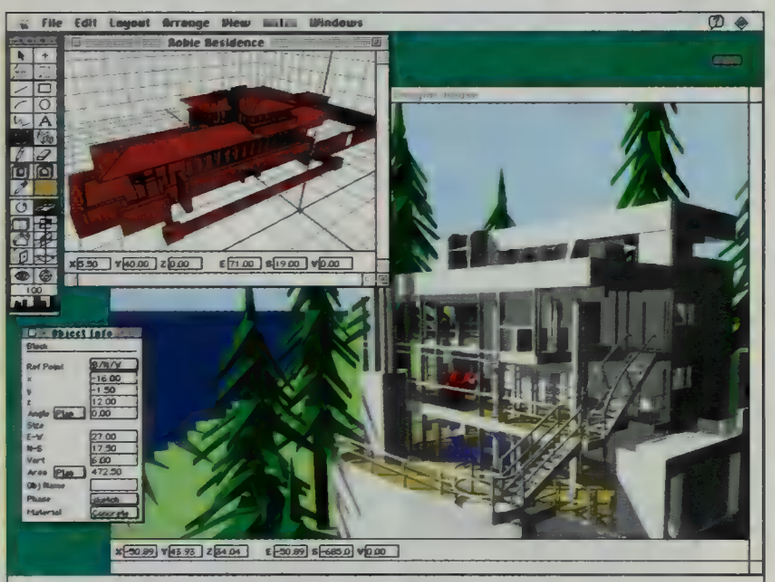
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Manufacturer Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

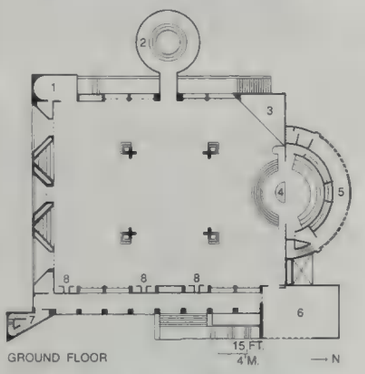
Pages 58-61
Maryville Aquatic Center
Shaughnessy Fickle and Scott, Architects
Laminated-wood beams: Timberweld. Ground-face masonry: Trenwyth Industries, Inc. (Trendstone). Exterior insulation and finish system: Dryvit Systems, Inc. Modified-bitumen roofing: TAMKO Roofing Products. Wood-frame casement and awning windows: Pella. Aluminum roof: Reynolds Metals Co. Honeycomb metal doors (concession stand): A. Zahner Sheet Metal. Poolside benches, dining tables, and chairs: GameTime, Inc. Water slide: White Water. Clock: Electric Time Co. Interior paints: Sherwin Williams. Pool coating and paint on cedar trellis: Tenemec. Water features: custom by Larkin and Associates.

Pages 62-63
CineMania Theatre
Gillerbe Becket, Inc., Architect
Backlit fiberglass panels: Moonlight Molds. Fixed molded-plastic auditorium seating: Intamin (Germany). Special cove lighting: Architectural Cathode Lighting. Etched glass: Trident Glass. Venetian plaster: Ora B. Hopper & Son, Inc.

Pages 64-69
Disney's All-Star Resorts
Arquitectonica and HKS, Inc., Architects
Built-up roofing: Schuller Roofing Systems (Manville). Fiberglass "icons": Molded Fiber Glass-Union City. Fire-resistant resin: Ashland Chemical (Hetron 92FR). Aluminium-panel "icons": Alliance America, fabricated by A. Zahner Sheet Metal. EIFS cladding: Dryvit Systems. Molded-polycarbonate signage: General Electric Plastics, Sheet Plastic Div. (Lexan); fabricated by Heath and Co. (Tampa). Special lighting: Fiberstars; Indy Lighting; Mapo. Storefronts: Wausau Windows; Kawneer Co., Inc. Glazing: PPG Industries, Glass Group; Guardian Industries Corp.
Interior partitions (steel studs; drywall): USG Corp. Paints: PPG Architectural Finishes; Pratt & Lambert. Special textures: Ultracrete; Duraplex; Texcoat. Poolside lounges: Allibert. Umbrellas: American Holzkraft. Pole and bollard lighting: Sterner Infranor. Concrete colorant, pool decks and pathways: L. M. Scofield (Mesa Beige). Pendants (food court): Holophane. Sconces: Abolite. Chairs: Fixtures Furniture.

Pages 74-81
The Apex: Herbert H. Lehman Physical Education Facility, Lehman College
Rafael Vinoly Architects, PC
Ground-face block; masonry sealant: Trenwyth Industries, Inc. (Trendstone). Precast-concrete infill panels: Beer Precast Concrete. Wide-span arched trusses: Canron Construction Co. Stainless-steel roofing: Overly Mfg. Co. Movable bleachers: The Folding Bleacher Co. Exterior uplights: Custom Illumination Concepts & Engineering. Entrances: Blumcraft. Metal cladding panels: Pohl. Gym floor and running-track surface: Martin Surfacing Co. Glazing: Libbey-Owens-Ford Co. Sealants: Dow Corning. Curtain-wall and storefronts: Kawneer Co., Inc.; Blumcraft. HVAC ducts: Custom by Triangle Sheet Metal. Pool tile: Dal-Tile Corp. Elevators: Dover.

Corrections
- Masoud Sodaify of KDG of LA was the project designer and the artist who did the rendering of the Cecil L. Murray Education Center, Los Angeles, by KDG Architecture and Planning [RECORD, Design News, January 1994, pg. 12].
- Massimo Vignelli designed the Knoll seating shown in the June 1994 issue [RECORD, pg. 145].



1. *Baptistry*
2. *Veneration Chapel*
3. *Chorus*
4. *Altar*
5. *Sacristy*
6. *Daily Mass Chapel*
7. *Bell Tower*
8. *Confessional*

- The legend below the drawing of the Managua Cathedral was incorrect [RECORD, July 1994, p.75]. Above is the correct drawing and legend.



Circle 23 on inquiry card



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A/E/C Systems Report

Continued from page 37

Océ-Bruning released new large-format scanners and copiers with easy-to-use software and easy networking. The Océ 7700 is "the missing link" for a high-volume multifunction plotting and copying system that includes equipment for registration, imaging, reproduction, and archiving.
Circle **375**

Principium, Inc., showed new plotter drivers for AutoCAD; it can enhance output to inkjets and electrostatic plotters, even making images appear "hand sketched."
Circle **376**

QMS announced a 600 dpi color laser printer, the first available for a desktop. The price is about $11,000 fully configured. QMS also showed CrownNet, new network interfaces for its printers.
Circle **377**

Pacific Data cut the price of its C-size bubble-jet ProTracer II printer/plotter to $999. It also offered multi-protocol network links.
Circle **378**

Calcomp showed E- and D-size bubblejet plotters with compact design and flexible interface.
Circle **379**

Summagraphics offered its first large-format inkjet plotters, and a fabulous large-format vector transfer system, SummaChrome, for images up to 24 by 40 inches. The narrow print head makes multiple passes over the whole sheet to keep costs down.
Circle **380**

American Video Training showed six VHS tapes and printed lessons for AutoCAD LT and AutoCAD Release 12 for Windows. At a reasonable pace (accounting for interruptions and breaks), it would take about a week to complete the lessons — even if you are not familiar with Windows beforehand.
Circle **381**

Artist Graphics showed a new version, 1.2 of its 3D RealTime imaging package for use with GPX-based graphics controllers. Full-screen Windows rendering inside AutoCAD was extremely fast.
Circle **382**

Mitsubishi Electronics America showed its new Diamond Control for Windows, on-screen setup software for choosing display and power-saving options. *Circle* **383**

Panacea is offering a free DOS display list driver for AutoCAD, for hefty speed increases in pans and zooms. It has offered free Windows drivers in the past; you now get 40 minutes a day of use. Functionality is excellent—and the upgraded versions are available by calling Panacea and getting a code to "unlock" the full versions.
Circle **384**

Matrox introduced its 64-bit graphics accelerator card, the MGA Impression Plus, with resolution to 1600 by 1200 pixels and 24-bit acceleration to 1280 by 1024 pixels. Its AutoCAD and Micro-Station viewers are fast and flexible.
Circle **385**

Vidar Systems showed the TruScan CS400 Color Selecting Scanner, for 24-bit output at 400 dpi, on documents up to 36 inches wide.
Circle **386**

WHAT HAPPENS WHEN YOUR CLIENT'S FIRE DOOR DOESN'T WORK?



Ask insurers and fire inspectors what they find when they drop test rolling fire doors in commercial buildings. Up to 20% fail.

But now, an informed specification can correct this problem and help your client reduce exposure to future liability.

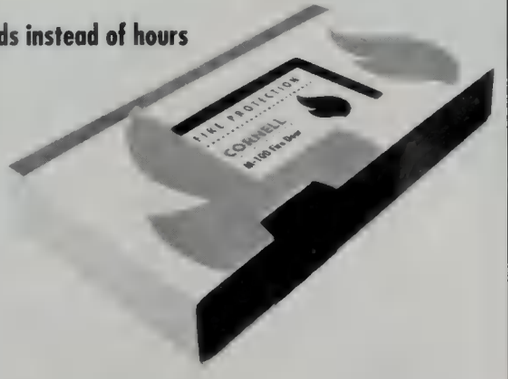
Why fire doors fail Heat-sensitive release devices have been painted over. Guides and coiling mechanisms have been damaged in collisions. Openings are obstructed. If a building owner doesn't test for these problems, he doesn't find them. Yet many owners don't test, even though an inoperable fire door can cost part of a building... or a life.

What the NFPA says The National Fire Protection Association in document NFPA 80 clearly states that *all horizontal or vertical sliding and rolling fire doors shall be inspected and tested annually to check for proper operation and full closure.*

The Cornell solution The new M100 fire door works the way no fire door has ever worked before. Advanced integral design sets new standards for reliability and superior in-use performance. Testing and resetting is done at the touch of a button.

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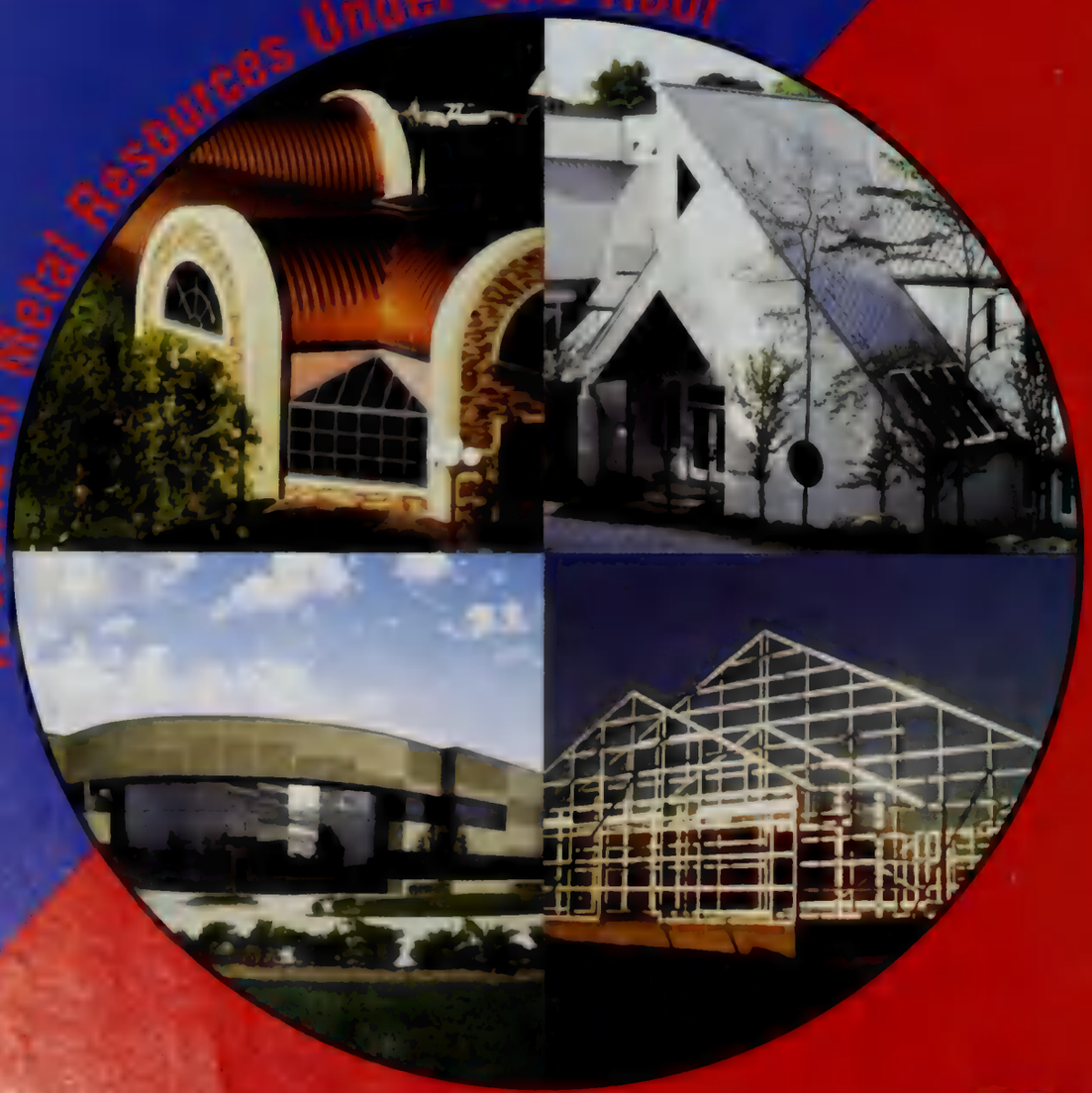
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Now there is a glass of such striking beauty that it draws the eye like a magnet. A glass whose unique aquamarine color transforms buildings glazed with it from mere architectural objects into performances of visual artistry. *Azurlite*® glass from PPG.

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With a full 71% light transmission in 6 mm thickness, spectrally selective *Azurlite* glass allows designers to realize all the openness, aesthetics, and efficiencies of daylighting. Yet its outstanding 0.58 shading coefficient provides solar heat gain management that delivers coolness and comfort. An unmatched performance ratio of 0.71/0.58=1.22.



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PPG

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Glass by PPG Industries

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A new leader in engineering reprographics has emerged. Océ-Bruning. Through a series of decisive moves, we've taken the game away from the competition, which makes you the real winner.

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We Think Every Great Door Should Have A Dependable Warranty.*

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From Ellison Bronze. Don't Argue.

*We cover the entire door, frame and closing hardware.

ellison

For additional information, technical binder and video, write, fax or call:
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125 West Main Street / Falconer, New York 14733 / 716-665-6522 / Fax: 716-665-5552

Circle 29 on inquiry card

WE WERE LOOKING FOR A WINDOW COMPANY THAT WOULD HELP THE GOVERNMENT RESIST LEAKS AND INFILTRATION.



General Services Administration Building, Oakland, CA. *Architect:* Kaplan McLaughlin & Diaz. *General Contractor:* Walsh Construction Co. *Products:* Custom 5600 Curtain Wall, Series FP-300 Entrance, Series 2000 Sliding Glass Doors, Custom Series 890 Equa-Vu® and System II® Windows.

The GSA contract called for random testi to verify the air infiltrat and water resistance specifications of the building's glazing syste The curtain wall, storefront, doors, an windows all had to perform to spec or the would be rejected. We wanted to work w a manufacturer that could give us the kind products and performance we needed to k the job moving on tim and on budget.

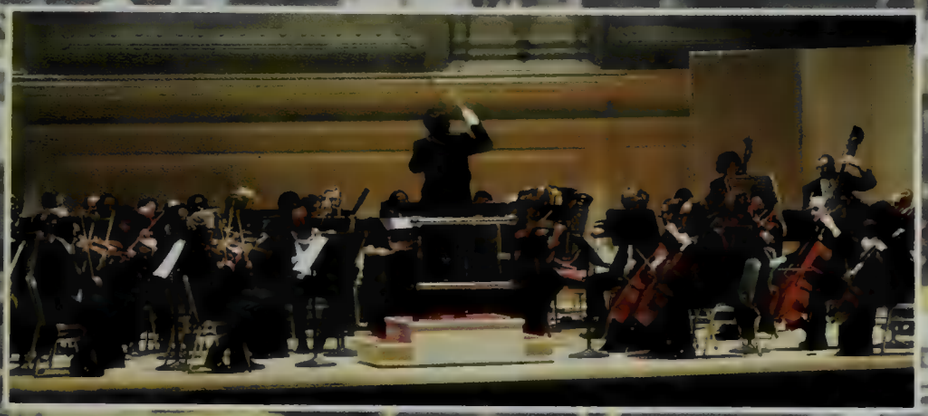
We awarded the job to EFCO.

EFCO

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1-800-221-4169

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Quiet Please





Don't let outside noise intrude on the inside performance

When you require theatre ventilation, emergency fire venting, and...

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- Reliable Performance
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Specify the fire vent that provides all three.

BILCO Acoustical Fire Vents are designed to provide a barrier against outside noise intrusion and at the same time provide necessary emergency automatic heat and smoke venting or manual ventilation. This unique design has gasketed and specially insulated upper and lower doors which open simultaneously when heat breaks the fusible link. The vents can be factory modified for easy operation from the stage area when you specify motorized or manual winch operation options shown below. These vents carry an STC rating of 45 and an OITC rating of 37.

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CALL FOR ENTRIES

RECORD HOUSES 1995

The editors of ARCHITECTURAL RECORD announce the 40th annual RECORD HOUSES awards program. This program is open to any registered architect; work previously published in other national design magazines is disqualified. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. There is an entry fee of $15 per submission; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8-1/2 by 11-in. folder—and be postmarked no later than October 31, 1994. Winning entries will be featured in the 1995 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

Submissions should be mailed to:

Karen D. Stein
RECORD HOUSES
ARCHITECTURAL RECORD
1221 Avenue of the Americas
New York, New York 10020

Product Literature Showcase

Here are some building products, catalogs, brochures, and technical literature available in the architectural market today. To receive your copy of any of them, circle the corresponding number on the Reader Service Card.

"FiberClassics"



Introducing the FiberClassics Columns and Balustrading. These fiberglass composite products are the leaders in their industry. FiberClassic columns are loadbearing and architecturally correct. The same premier precision as our other products; wood columns, moulding, niches, and much more. Worthington presents the top architectural products available today, shipped factory direct. 44-page color catalog available. 800/872-1608

Worthington Group, Ltd.

Circle 32 on Inquiry card

Interior Systems LaCrosse



***Arkid* tecture Funscapes** is the newest addition to **Interiors Systems' Signature Series**. The *Arkid* tecture collection uses a unique computerized cutting system to produce standard and custom acoustical ceiling tile designs for schools, children's clinics, hospitals, daycare centers, retail stores. Use single or multiple panels with any design, logo, or color. Call 1-800-782-0070.

Interior Systems

Circle 33 on Inquiry card

Revere Copper Shingles



Revere Copper Shingles are quicker and easier to install than ordinary asphalt shingles. There are no special skills required & no special tools. Because Revere shingles are manufactured from solid copper, not a foil laminate, they will likely last as long as the building they protect. To learn more about our copper shingles, or any of our other copper roofing products, call us toll-free at 800-490-1776.

Revere Copper Products

Circle 34 on Inquiry card

Carved Marble Fireplace



$699 per set. Direct importer of marble, granite, limestone and slate. Marble starts at $3/sq.ft., granite $5/sq.ft., and slate at $1.50/ sq. ft.. For a free brochure or more information call (510) 782-2888 or write to Jerong Products, 23785 Cabot Blvd., #313, Hayward, CA 94545.

Jerong Products, Inc.

Circle 35 on Inquiry card

Atlas Roll-lite's 1994 Sweet's Catalog



Atlas Roll-lite's 1994 Sweet's catalog for rolling doors provides in-depth product information on: service doors, insulated doors, fire doors, shutters, grilles and motor operators. Throughout the last year, Atlas Roll-lite has continued to improve and add to the products available in the Rolling Door industry. For more information, contact Murray J. Hammer at (800) 959-9559.

Atlas Roll-lite

Circle 36 on Inquiry card

Metal Ceilings & Specialty Products



Open cell, linear metal, luminous, baffle, and metal panel ceiling systems in a wide range of styles and options are but a few of the products covered in this comprehensive ceiling systems brochure. Tamper resistant security ceiling systems are also detailed. Vital information for your files.

Interfinish

Circle 37 on Inquiry card

Product Literature Showcase

Custom Metal Graphics



Multi-directional brushing and non-directional satin combined with mirror polished finishes on stainless steel to bring out the beauty of an Art Deco design. SURFACE DESIGN + Technology produces distinctive finishes on a variety of metal surfaces for elevators, doors, walls, ceilings, and furniture. These designs can be custom made to your specifications.. For additional information on custom or standard designs, call 800-537-1127.

SURFACE DESIGN + Technology

Circle 38 on Inquiry card

New Craftsmen™ Benches



TimberForm® presents a catalog of their new Craftsmen series of benches, seats & litter containers. Photos, technical data & product dimensions are shown. Inspired by the design qualities of the American Craftsman style, & created for demanding street, park & mall locations, this site family uses heavy-duty cast bench frames with matching cast litter containers. Choose from Alaska yellow cedar, Marine Teak or Purpleheart bench slats. Graphics & lettering can be added to the castings. Over 170 designer colors are offered. Call toll-free 1-800/547-1940 (Ext.525)

Columbia Cascade

Circle 39 on Inquiry card

ROOFTOP HELIDECK The Next Generation



The new Marine Aluminum pre-fabricated helicopter deck has several advantages over the older one. It is made from the same maintenance free alloy, but is even lighter and easier to assemble. No welding or drilling is required in the field, and the pre-engineered package can be simply disassembled and relocated. The deck weighs only about 10 lbs./sq.ft. yet will support nearly all helicopters in use today.
Phone 215-380-0905.

Gerard Technology

Circle 40 on Inquiry card

Baby Changing Stations

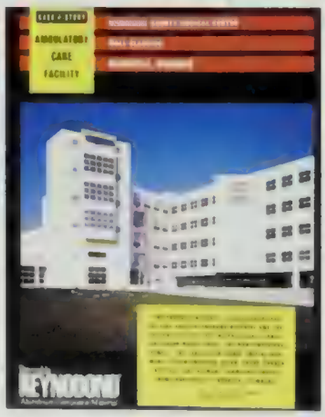


Koala Corp.'s Baby Changing Stations are designed to be compatible with parents & babies & the A.D.A. Steel-on-steel hinges withstand a static load of 350 pounds. Ou 10-gauge steel door stop system prevent any sag in the changing platform. Ever when the weight of a child is added, the platform doesn't descend past the horizontal plane. Installed, our new horizontal design unit extends no more than 4" from the wall when closed, to conform to A.D.A regulations 4.4.1, for 4" maximum protruding object when & where applicable. When only a forward approach is allowed, the horizontal unit can be installed in accordance with A.D.A. regulation 4.2 for forward reach. If space allows a parallel approach, both units can be installed to meet 4.2.6 for side reach. Built to last, each Station is backed by a five year warranty on all parts & labor. Call 1 800-666-0363.

Koala Corp.

Circle 41 on Inquiry card

MCMC Case History



Fire resistant REYNOBOND® Aluminum Composite Material is featured in a case history of the exterior cladding of the Milwaukee County Medical Center in Wauwautosa WI. Continuing details and comments by the steel and fabricating contractor's involvement with REYNOBOND®

Circle 42 on Inquiry card

Not The Same Old CAD!



Chief Architect™ is an economical 3D Microsoft Windows-based Architectural design software system. It's object-oriented "Smart Technology" lets you easily design floorplans in minutes, complete with an automatic Bill of Materials. Simply mouse-click on your floorplan to yield 3D perspective, elevations, and overviews.
800-482-4433.

Advanced Relational Technology, Inc.

Circle 43 on Inquiry card

Accessible Lavatory Insulation



A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use, sample specifications, drawings and color choice are all summarized in this easy to understand catalog.

Plumberex

Circle 44 on Inquiry card

REASONS Stacking System for Improved Office Spaces



REASONS from Transwall Corp a manufacturer of movabl office partitions & systems furn ture, is a new stacking syster designed to provide improve office space facilities wit maximum flexibility & a minimur of parts inventory. It offers quic off-module changes for wor surfaces & overhead storage which can easily be rearrange on horizontal rails without struc tural panel changes. Total wir management is provided in th 4" thick panels, as well as a unlimited choice of aesthetic color selections.

Transwall Corp.

Circle 45 on Inquiry card

HEAT-N-GLO Fireplace Products



Looking for quality fireplaces that combine efficiency and aesthetics? Call for our brochure on energy-saving built-in gas or woodburning fireplaces. Including see-thru, three and four sided glass fireplaces, inserts for pre-existing fireplaces or our direct-vent (no chimney) gas fireplace available with remote control. Call 612-890-8367.

Heat-N-Glo

Circle 46 on Inquiry card

VIXEN HILL MFG.

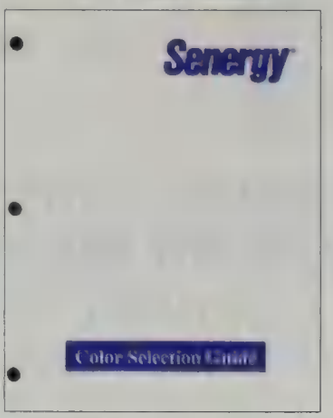


Tired of imitation shutters made from a mold? Unhappy with shutters held together by staples? Give yourself a surprise: traditional working shutters made of clear, old-growth western red cedar. Constructed with authentic teak-pegged mortise & tenon joints, Vixen Hill manufactures 8 classic panel & louver styles in standard & custom sizes. Cedar shutters feature heavy stiles & cross-rails as well as separate interlocking trim & extra thick louvers for extended product life. For brochure call 1-800-423-2766.

Vixen Hill Manufacturing

Circle 47 on Inquiry card

Senergy Offers New Color Chart

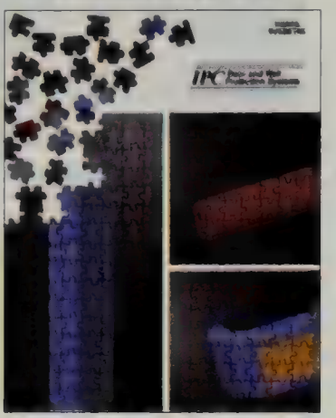


Senergy Inc. has expanded its line of standard colors and offers its new color chart at no cost. The *Senergy Color Selection Guide* contains 45 of the most popular contemporary colors and accents. Each of these colors is available in 100% acrylic Classic, Sand, Sahara, and Texture finishes, as well in Silcoat finishes.

Senergy, Inc.

Circle 48 on Inquiry card

Door and Wall Protection Systems



IPC - Institutional Products Corporation is a manufacturer of high impact door, corner and wall protection systems. Our catalog illustrates a product line that includes Handrails, Corner Guards, Wall Guards, Kickplates and Wallcovering. Our durable vinyl products, offered in 50 designer colors, provide an attractive way to protect interior finishes from damage.

Institutional Prods. Corp.

Circle 49 on Inquiry card

Stone Panels



Ultra-Lite natural granites, marbles, limestones & slates. Offering natural stones with 80% less weight. Reinforced for high impact & flexural strength. Especially well suited for renovation & reclad. Saves on back-up framing & structure requirements. Reduce installing labor costs. Used on building exteriors throughout the world. Also elevator cab & lobby cladding, ceilings & locations requiring real stone but less weight.

Stone Panels, Inc.

Circle 50 on Inquiry card

Newest Thermostat Models

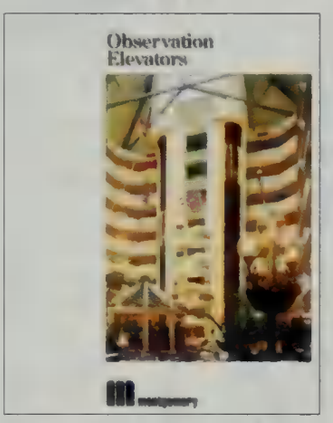


More than just a heater - it's an investment in comfort that pays dividends in $$$'s! 99.9% efficient, fully automatic thermostat, easy to use automatic pushbutton ignition. Vent-free, patented ceramic burner plate technology delivers radiant and convection heat simultaneously. Get more than you bargained for $ for $ you can't beat a Rinnai. For information telephone: 1/800/621-9419.

Rinnai America Corp.

Circle 51 on Inquiry card

Observation Elevators



Observation elevators have become increasingly popular. They give passengers an expansive view of architecturally interesting lobbies, atriums, etc. Responding to this popularity, Montgomery Elevator Co. has published a new brochure devoted to Hydraulic and Traction Geared Observation Elevators. Helpful dimensional information, details regarding shape and decorative shrouding data are all provided.

Montgomery Elevator Co.

Circle 52 on Inquiry card

PLASTRGLAS Glass Fiber Reinforced Gypsum



Innovative designs are made simply, economically and easy to install with PLASTRGLAS Glass Fiber Reinforced Gypsum. A complete line of columns, domes, coffered ceilings, capitals, and light shelves are offered and are engineered to meet the most exacting architectural specifications. Products are shipped in special crating to avoid handling problems. Architectural fabrications are available for interior as well as exterior use. Call (402) 455-0652

PLASTRGLAS, Inc.

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Classified Advertising

To Advertise Call Cherie Jolley 801-974-2843 or Fax 801-972-9409

POSITIONS VACANT

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Adult Detention Center

$3,831 - $5,655/Month

Hennepin County, the largest unit of local government in Minnesota with over 10,000 employees, has an excellent career opportunity for a Design and Construction Manager.

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Your primary duties are to coordinate development and review of architectural program requirements; participate in negotiations and the preparation and implementation of technical/legal documents; coordinate the resolution/litigation of construction problems and contract disputes; manage and coordinate schedule development and project implementation; and manage construction administration activities and costs.

To qualify, we require a Bachelor's degree in Architecture and four years of post registration experience as a professional architect, including at least three years of experience managing professional/technical staff activities in the design and construction of architectural/engineering projects. You must be a Registered Architect licensed to practice in the State of Minnesota. Experience in design and construction of security facilities is strongly preferred.

In addition to an excellent salary, we offer a comprehensive benefits package. To receive an application by mail, please call (612) 348-5584. Applications must be received by Wednesday, August 31, 1994.

Hennepin

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Affirmative Action Employer

Design Director-Direct, design and coordinate planning and implementation of automated, retail environment design programs for corporate automotive customers in a 3 dimensional environment utilizing Wavefront visualization and Intergraph CAD software systems. Consult with clients during development and implementation of programs. Salary: $75,000/year for 40 hours/week. Requires Bachelor of Science degree in Architecture. Requires two years experience in job offered. Apply at the nearest Department of Labor Field Service Office or send resume to Georgia Department of Labor, Job Order #GA 5746563, 2636-14 Martin Luther King Jr. Drive, Atlanta, Georgia [illegible]. Ad paid by an Equal Opportunity Employer.

Designer. In order to extend our [illegible] Mexican applicant must [illegible] and have experience in [illegible] Mexican design [illegible] and commercial [illegible] years experience in Mexican building [illegible] as well as [illegible] building techniques [illegible] both the English and Spanish languages; the planning development design and implementation of school and university projects; incorporating contemporary Mexican design influence into American design processes. A Bachelor's degree in Architecture, whether earned in the United States or Mexico, is essential. In order to have access to and in order to be able to carry out regulatory architectural requirements in Mexico, applicant must be a registered architect in Mexico. 2 years experience. 40 hr/wk. $10.31 per hour. Applicants submit resume to: N.M. Dept. of Labor, 226 S. Alameda, Las Cruces, N.M. 88004. Job order No. 426800.

Interpretive Exhibit Designers, Junior and Senior positions available. Appropriate degree with two to six years professional experience planning and designing exhibits. Seeking talented, dynamic individuals who work well in a large, team environment on national level projects. We are located in the picturesque hills of southeastern Ohio, close to a major university. We are an EOE actively seeking diversity in our personnel. Send your resume and letter of interest to: Paul Stromdahl, Associate, Gerard Hilferty and Associates, Inc., 14240 Route 550, Athens, OH 45701

POSITION AVAILABLE:

Dean, College of Architecture and Urban Planning, University of Washington, Seattle, WA 98195.

The College has four departments: Architecture, Building Construction, Landscape Architecture, and Urban Design and Planning. There are over 65 faculty members and over 600 students in undergraduate, graduate, and certificate programs.

Applicants must demonstrate outstanding academic and/or professional achievement as well as very high aptitude for leadership and management. Women and minority persons are strongly encouraged to apply.

Position available January 1, 1995.

Send nominations, resumes or inquires to:

Professor Wilton Fowler,
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Seattle, WA 98195

Architect: Established 30-person A-E fir seeking registered architect with strong desi and presentation skills. Requirements inclu NCARB certification, 10 years experience conceptual design, working drawings a AutoCAD plus marketing skills. Send resum and salary history to: ENG/6A, 10 Hendersonville Rd., Asheville, NC 28803. EO M/F/H/V.

Phoenix Project Architect/Departme Manager w/Hospitality/multi-family expe ence Full responsibility design/constructi documents. Management and interperson skills required. Financial incentive/compens tion tied to dept. profitability. Mail resume 1840 E. Warner Road A105-154 Tempe, 85284.

Architect- BS, 5 years minimum expe ence in design of buildings, (offices, maintenan shops, warehouses), and miscellaneous str tures and facilities. Registration preferred. Flu English language required. Work location Khob Saudi Arabia, for one year initial assignme Benefits include annual one month leave, w transportation; holidays; sick leave; health; ho ing and transportation. 48 hour week. Submit sume, work history, and 5 to 10, 8 ½ x 11 cop of relevant work samples by mail or fax Personnel, Saudi Consolidated Engineeri Company (Khatib & Alami), 4320 El Prado # Tampa, FL 33629, or Box 1718, Khobar, Sa Arabia; Fax Direct Dial: 011 966 3 894-2341.

Architect/CAD Manager-Design develo ment and completion of all phases of constr tion documents including architectur structural, electrical and mechanical, detail and shop drawings, all using AutoCAD R12 Windows; 2D and 3D presentation including r derings and animation; Management of the C system and CAD libraries including creation o braries of mechanical & electrical/ structural chitectural/ landscapes detailing, customizat of menu according to project nee Requirements: Masters in Architecture, 1 y training in CAD System & Computer Graphic Years experience, and knowledge of AME, Studio/Renderman, Freelance Micros Publisher 2.0, AccuRender Painter 2.0 Photofinish, and Omniscan. 40 Hours, 8:30 A. 5 :00 P.M. Monday-Friday $29,600/year. Send sume to: Job Service of Florida, 3421 Law Road, Orlando, FL 32803-2999, Re: Job Orde FL-1071263.

FACULTY POSITIONS VACANT

Dean, School of Architecture, University of Southern California, Los Angeles, CA. Nominations and expressions of interest are invited for the position of Dean of the School of Architecture of the University of Southern California. The Dean reports to the Provost and Senior Vice President for Academic Affairs. Candidates should have a clear perspective on the dynamic national and international forces shaping architecture and a strategic vision of how to position the School to respond to new opportunities. The successful applicant must have an appropriate degree to qualify as a tenured member of the faculty and a distinguished career incorporating professional, administrative and academic experience. The Dean will stimulate, encourage and coordinate the intellectual and scholarly interests of the faculty, strengthen alumni relations, and develop financial resources. The Dean will also work with the faculty in the development of new curricula and maintain relationships with the student body and expand the University involvement with the urban community. The School's internationally recognized faculty reflects varied perspectives in the field. USC has the oldest private school of architecture in the western United States and offers undergraduate degrees in architecture, building science, master's degrees in architecture, building science, and landscape architecture, as well as joint master's degree programs with the School of Urban and Regional Planning. The School presently enrolls approximately 400 undergraduates and 50 graduate students and 20 full and approximately 20 adjunct and part-time faculty. The University of Southern California is located near the center of metropolitan Los Angeles and is one of the nation's leading institutions of teaching and research. USC is a member of the American Association of Universities, and is the oldest private research university in the western United States. Nominations and expressions of interest will be received until the position is filled and should be submitted to: Dr. Lloyd Armstrong, Jr., Provost and Senior Vice President for Academic Affairs, University of Southern California, Los Angeles, CA 90089-0119. The University of Southern California is an equal opportunity/ affirmative action employer and actively seeks nominations of and expressions of interest from minority and female candidates.

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Consultant's Directory

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*Surveys *Evaluations *Feasibility Studies
*Specifications*Expert Witness
*Failure Analysis *Restoration Procedures

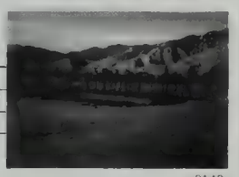
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BOOKS FOR SALE

Architecture Books. Old, rare, out-of-print. Send $3.50 for catalogs. We also do book searches. $3.00 per title. Beattie Book Co., P.O. Box 739, Cape May, NJ 08204. (609)-886-5432.

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Circle 57 on Inquiry Card

New Site Catalog
Shown: TimberForm® Madison™ Bench



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350 cast iron, steel and wood
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The new 88 page catalog presents traditional through contemporary design families. Matching benches, ash receptacles, litter containers and planters in more than 170 colors are offered.
Call toll-free 1-800/547-1940 Ext. 577
Columbia Cascade
1975 S.W. Fifth Ave. Portland, OR 97201 503/223-1157

Circle 58 on Inquiry Card



Decorative Grilles in Color
Add a new dimension to your designs with these decorative grilles which can be used to make striking unusual effects. Choose from an array of custom colors to match or contrast existing grilles. Designers can create numerous metal forms for interior or exterior applications. Write for a catalog:
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202 Norman Avenue, Bklyn., N.Y. 11222.
Call 718-383-9090 or 1-800-521-4895
Fax# 718-349-2611

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Advertising Index

For detailed data, prefiled catalogs of the manufacturers listed below are available in your 1994 Sweet's Catalog File as follows:

(G) General Building & Renovation
(E) Engineering & Retrofit
(I) Industrial Construction & Renovation
(L) Homebuilding & Remodeling
(D) Contract Interiors

Bold Face - page number
Italics - Reader Service number

A

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Ellison Bronze Co., Inc., **101** , *29* [G]
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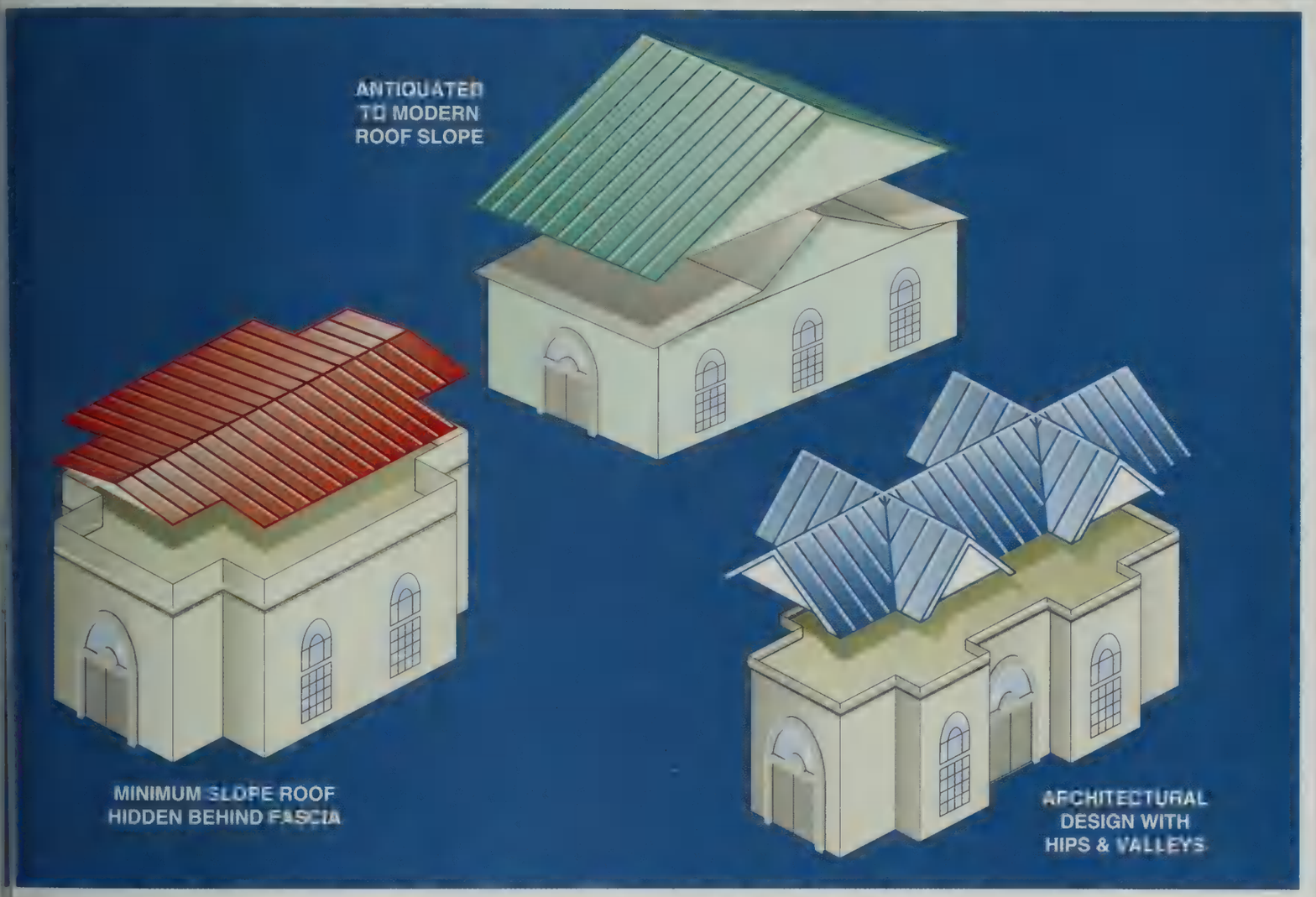
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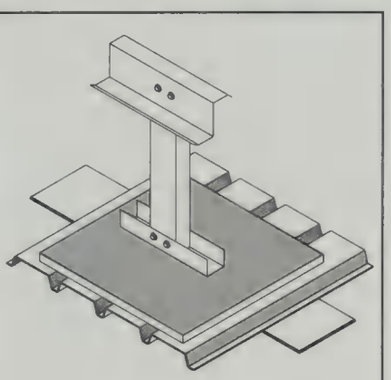


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When your clients want to stop patching their leaky roofs, take a look at MBCI's NuRoof™ Retrofit System. You'll find the design flexibility you need to solve their problem with the look of your choice - from a simple slope to a bold architectural statement.

The NuRoof Retrofit System is a pre-engineered light-weight metal framework that supports the installation of a new sloped roof over the existing flat roof, with a wide choice of roof slopes, hips and valleys, gable endwalls, and MBCI's complete line of pre-formed metal roofing system panels, profiles and colors.

Once you've determined the adequacy of the existing roof structure to resist the necessary loads, you're all set. Our Design / Installation Manual details column spacing, strapping and bracing requirements, framing for endwalls, hips and valleys, eaves and rakes - for both perpendicular and parallel existing structurals.



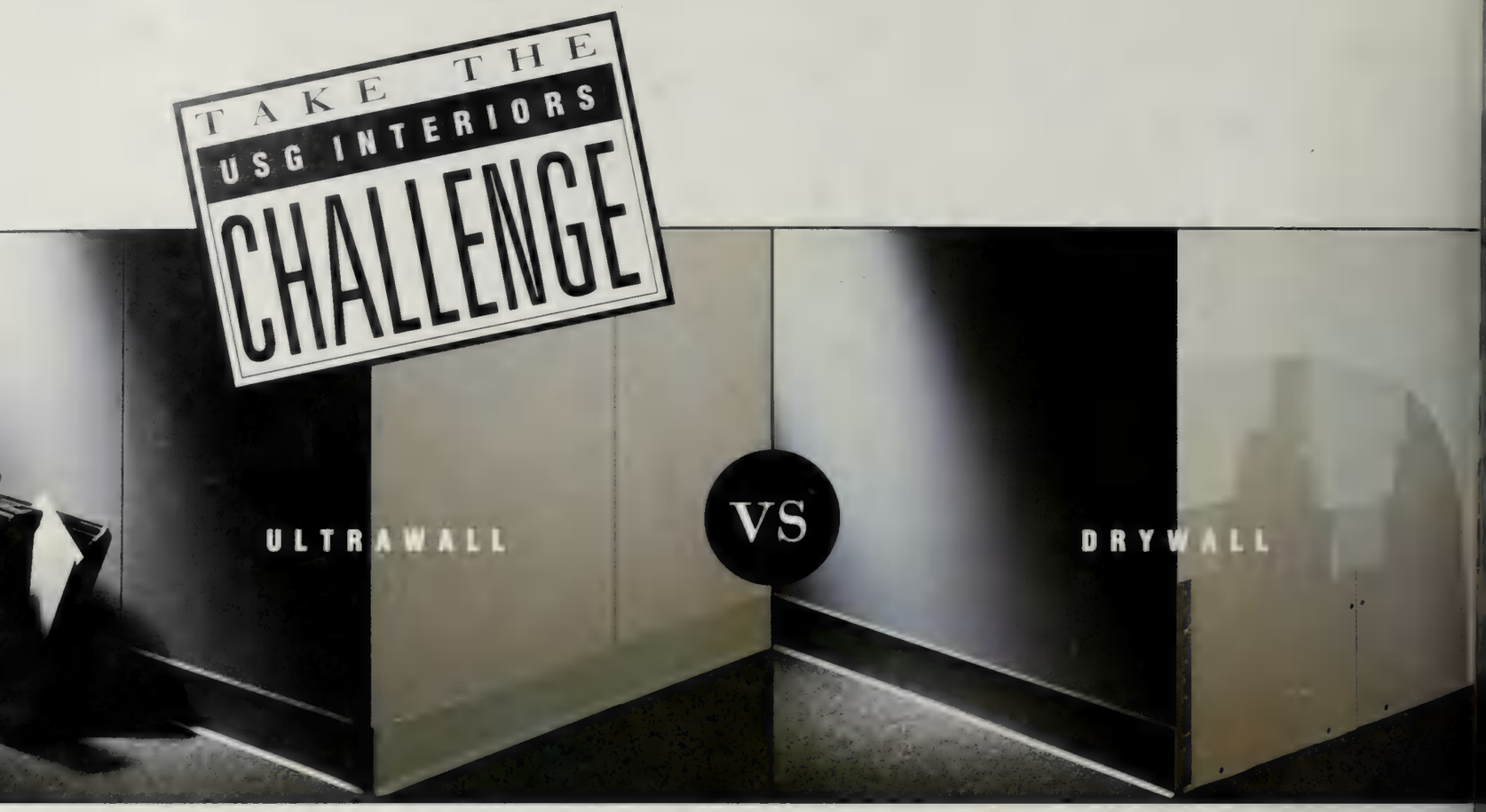
Structural detail
from NuRoof
Design / Installation Manual

The NuRoof Manual is free for the asking. And if you want more information, or specific details for a specific project, just give us a call. Together, we can achieve the exact look you want.

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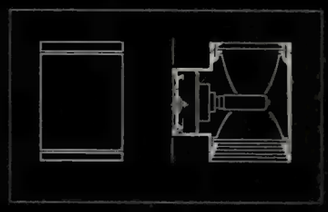
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Dual directional illumination
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Circle No. **64**

St. Patrick's Seminary Chapel, Menlo Park, California **26**

Richard Zlatunich, Architect
Ross De Alessi, Lighting Designer

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Baumschlager, Eberle, Grassman, Architect
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Eyeglass Store Makes a Spectacle of Itself at Shopping Mall/Shedding New Light on an Older Style in Multipurpose University Auditorium/Winners, Moves, Events, and More/IALD Honors Eight Projects and Awards a Surprise Special Recognition/Utility Lighting Scheme Aims For Subtly Potent Skyline Punch/Light Reading From Rensselaer/Unintended Irony Lights View of an Infamous Skating Rink

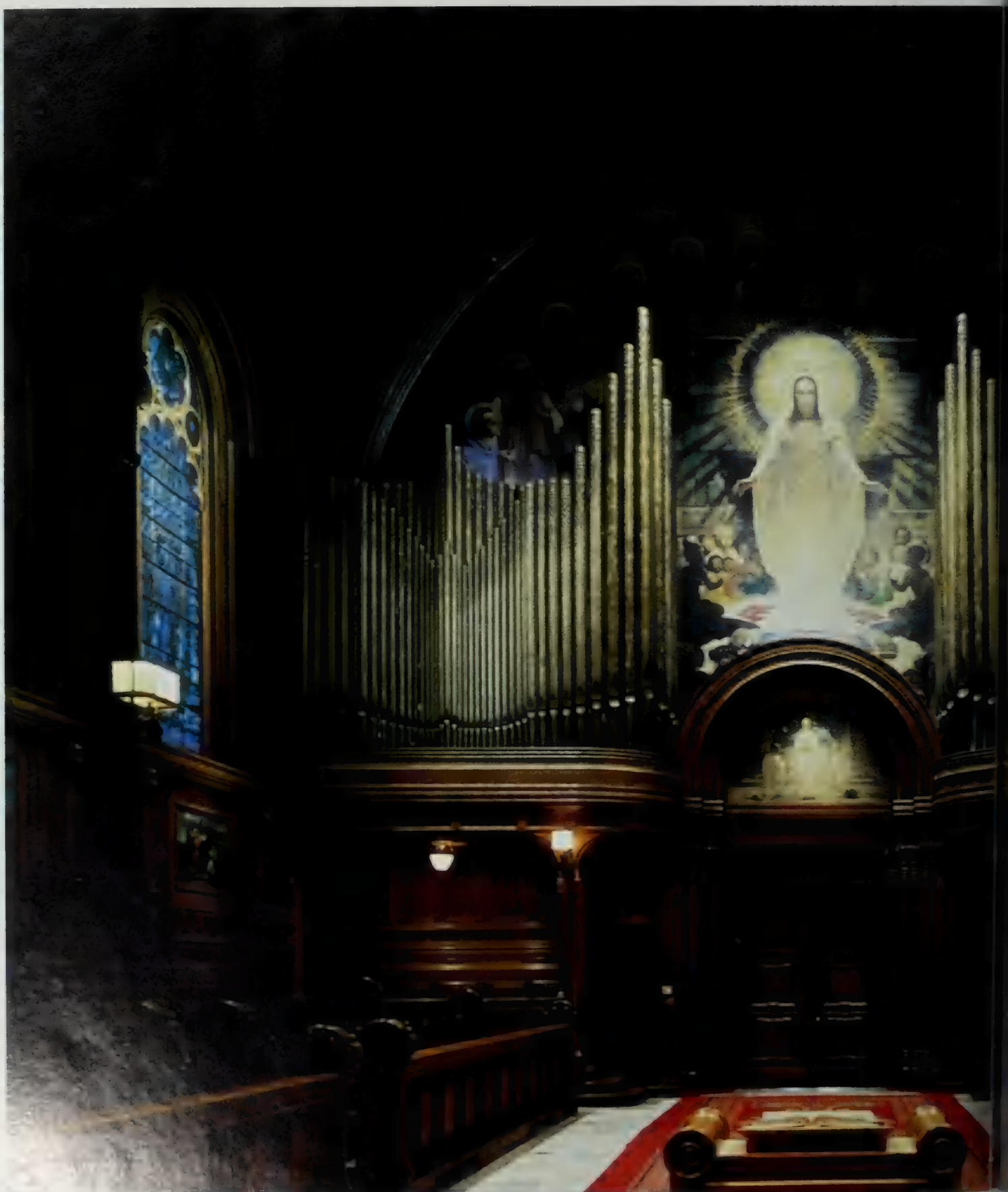
Lighting Technology **14**

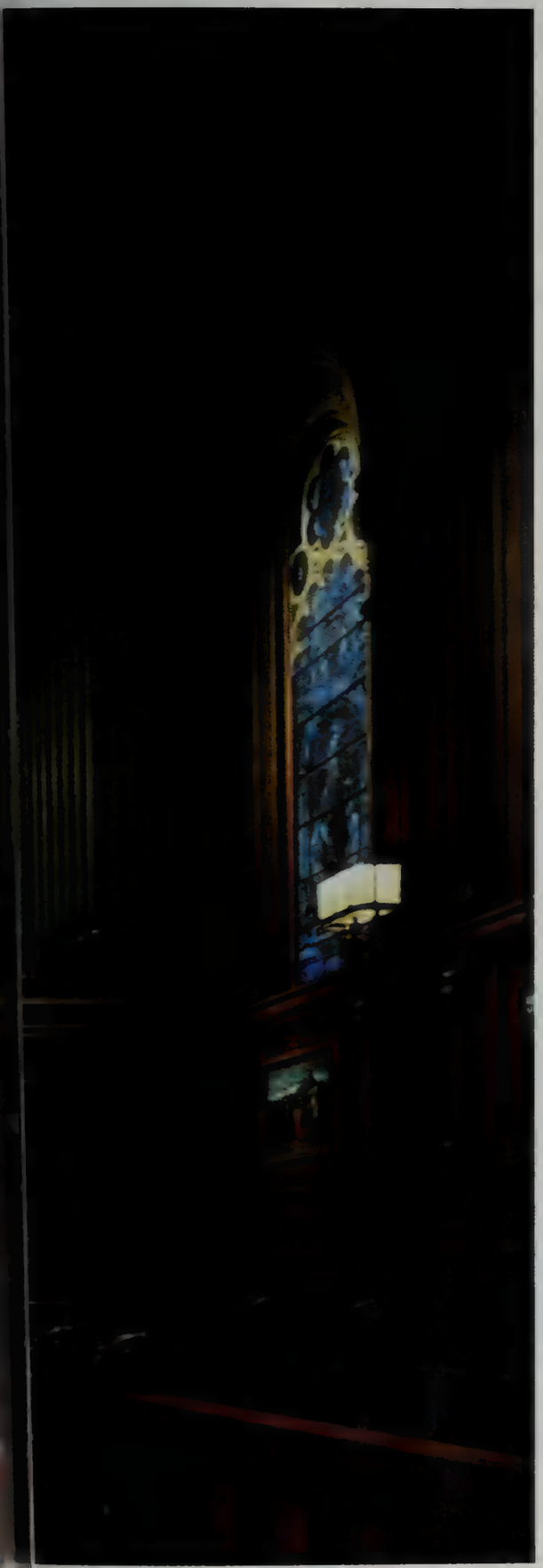
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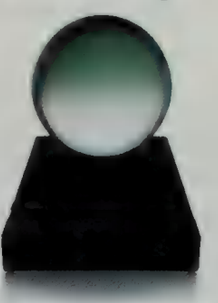




The Lighting Design Required Much Contemplation. The Results Will Inspire The Same.

St. Patrick's Chapel, Menlo Park, California. Stunning proof of what devotion to quality lighting can accomplish.

Illuminated by Ross De Alessi Lighting Design, the chapel now emphasizes contemplation and worship in a way its 19th-century architects could hardly have imagined.



And the lighting De Alessi chose, GE long-life, quartz-halogen lamps, beautifully and efficiently complies with California's strict 20th-century energy requirements.

All of which is why De Alessi captured the prestigious 1993 GE Edison Award for excellence in lighting design. To find out how you can achieve equally inspiring results, call your GE Lighting specialist at 1-800-523-5520.

GE Lighting

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upper left: ZXST, ZXRC, ZXC, ZXSRW. For further information and the name of your local sales representative, Please conta
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Crisp, white illumination and a color index equal to true daylight makes halogen the best solution for today's most challenging lighting applications. Pure white halogen light renders colors perfectly because it contains every color in the spectrum. So, whether you're illuminating a work of art, a retail setting, or an interior, you want to use the OSRAM SYLVANIA line of energy-saving halogens. We make one for every halogen fixture.

For the efficient, high-performance line-voltage arena, we've improved on our pioneering capsylite technology, removing the diode and the flicker. They're available in a wide variety of wattages, diameters, and beam patterns. We also offer the broadest selection of double ended (RSC) halogens in the industry.

In the low-voltage category we feature our versatile TRU-AIM® MR-16 line, which combines consistently superior color rendition and high output, with low temperature and long life. We make them in a full range of wattages and beam spreads and even in our exclusive bi-color format. We also have the industry's best selection of high quality bi-pins.

Best of all, every one of our innovative products is backed by the dependability and service commitment that has made OSRAM SYLVANIA the leader in the field of light. Call 1-800-LIGHT-BULB and let us help bring your designs into the light of day.



OSRAM SYLVANIA

Technology Brought to Light

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SUN LIGHT



SUN LIGHT
Double ended
Metal Halide Lamps,
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up to 75 watts each
Color [illegible] (White Sun™)
[illegible] aluminum construction
[illegible] vertical adjustment
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Pulsar System – Flexible Lighting Design









The Pulsar system is a series of functional ceiling fixtures for compact fluorescent lamps, designed by the danish architect Alfred Homann.

The Pulsar series is based on one lighting enginering principle which can satisfy demands for varying levels of illumination. Light is controlled by the use of metallized shades or diffused softly with opal shades.

The Pulsar System comes in two versions: surface or ceiling mounted. The series also features two types: Pulsar 135, 18W CF lamp and has slightly smaller shades.

For further information, contact:

louis poulsen

Poulsen Lighting, Inc. · 5407 N.W. 163rd Street · Miami, Florida 33014
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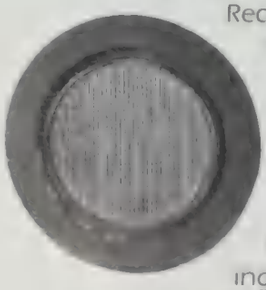


DON'T DISTURB THE NEIGHBORS

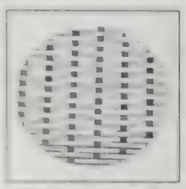
Great light control with 10:1 mounting height to spacing ratio achieved by new recessed wall light from Hydrel

Avoid annoying glare and invasive light trespass with Hydrel's 9600 Series Recessed Wall Lights

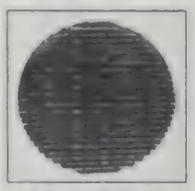
Innovative Light Control - Glarefoil®, a unique internal glare screen, was developed especially for the new Hydrel 9600 Series Recessed Wall Light. A thin laser-cut metal louver designed to mount behind the lens, Glarefoil® provides exceptionally sharp cutoff, effectively eliminating undesirable glare and light trespass.



Sharp Cutoff - Cutoff effectiveness is apparent when viewing the internal louver from below horizontal, and from straight on (see below).



Louver from below



and from straight on

Improved Beam Patterns - Precise tuning of lamp / reflector / lens and the new internal glare screen give the 9600 Series its extraordinary light control and remarkable beam range. A 9600 with horizontal wide distribution and 100 watt HID lamp is capable of a 10:1 mounting height to spacing ratio, compared to the usual 3:1 spacing for common small step and wall fixtures. The series is available in three lateral distributions and three forward distributions as well as left or right skew for stair installations.

Compact, No Condensation - patented sealing technology and modular construction provide air cooling to allow reduced size and simple installation/maintenance. Dry air purged lamp modules eliminate condensation.

The 9600 Series is available in a variety of styles and lamp options. For more information contact your area Hydrel sales representative or the factory.

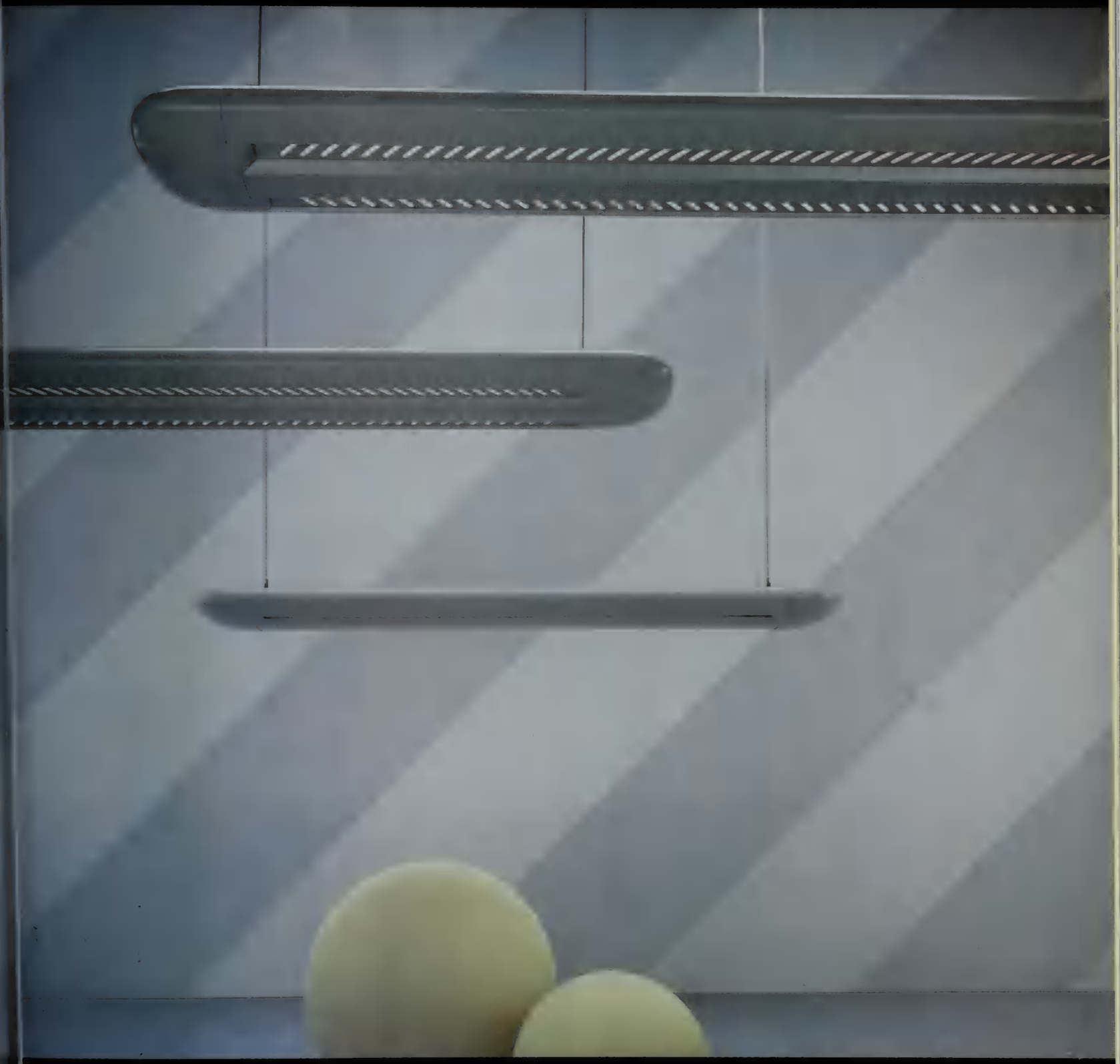


Sealed lamp and power modules install easily into non corrodible backbox.

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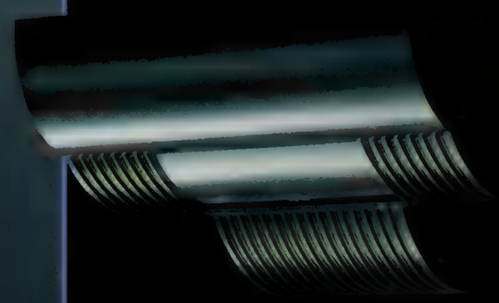
Soft indirect light for visual comfort. Soft direct light for subtle highlights. A choice of distinctive downlight screen patterns. The 9 x 3 Lightscreen Indirect™: A graceful and unique lighting solution only from Peerless.

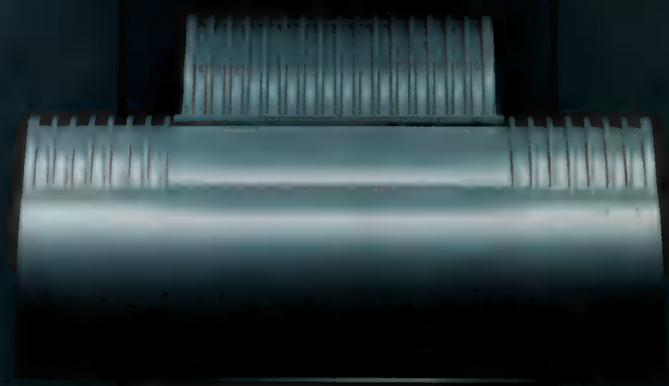
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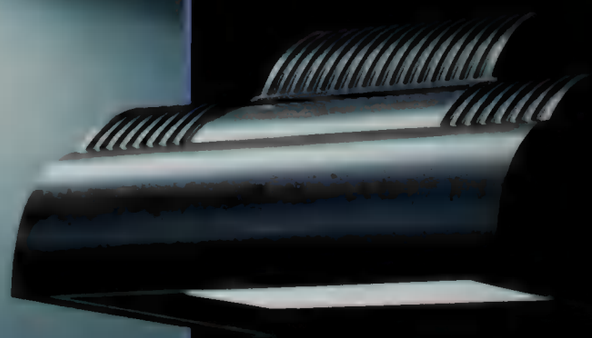
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High Performance
Total Cutoff
Adjustable and Invertible
Three Light Distributions
2 Sizes: 14" 70-175W and 18" 250-400W HID
Kim Quality and Durability





Introducing Kim's new line of Wall Mounted Outdoor/Indoor Luminaires



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California

Eyeglass Store Makes Spectacle of Itself



For l.a. Eye Works in Costa Mesa's South Coast Plaza, Schweitzer BIM strove for perimeter drama to invite–through a thin glass store front–browsing among the eyeglasses styles and, at the same time, a serene center with the proper lighting conditions for trying on and fitting styles. Josh Schweitzer, who designed the store and lighting, devised a series of plaster-on-steel-frame ribs that draw attention to a truncated pyramid of soffits that step up to an 18-ft-high ceiling over the sales and display area. The upper segments conceal 75W PAR38s in inexpensive exterior "bullet" lamp holders; behind the lower segments, 27W screw-in compact fluorescents installed on both sides of wooden uprights create a bright white backdrop for the lens tints and frames on display. MR11 and MR16 pinpoints shine from the lower soffit into the central trying-on area. ■

Delaware

Shedding New Light on an Older Style at Multi-Purpose University Auditorium



When Ewing Cole Cherry Brott renovated Mitchell Hall at the University of Delaware, the multi-purpose auditorium not only regained much of its original 1929 character but also acquired an up-to-date lighting system devised by theater consultant Robert Davis. Faux upper balconies were built to conceal metal-halide uplights that bounce enough indirect light off the ceiling to allow the space to be used for lectures and tests; drop-down ladders provide swift maintenance access. The oculus is defined by a necklace of PAR lamps that focus on the center orchestra when a theatrical ambience is required and A lamps that highlight the decorative band around the oculus; they rotate up into the plenum for relamping. Sixteen 150W RLM domes placed were placed above the oculus to simulate daylight shining through the new stained-glass lens.■

Design

Briefs

Winner, Moves, Events, and More

•Among the New York Landmarks Preservation Commission's 1994 design-excellence awards are: Eastern Parkway scenic restoration, lighting by Howard Brandston & Partners; and the Eugene O'Neill Theater, restored fixtures by Versailles Lighting.

•New York IES has awarded its 1994 Richard Kelly grants to artist Karl Ciesluk for his environmental light works, to Kurt Levens for his thesis "Lighting a Building with a Single Bulb," and to Steven Hefferan for a mathematical modeling tool to analyze the use of daylight in museums and galleries.

•The Robert J. Besal Memorial Education Fund has expanded its support to the illumination specialization in the architectural engineering program at Kansas State.

Moves

•Cooper Lighting has named John Hollander manager, new-product development.

•In a joint-venture agreement, Hydrel of California will be represented by the Noral Group in Europe, and will manufacture and market Noral products in North America.

Events

•"Broadway Theater Lighting" features Jules Fisher; October 6-9; John Jay College, New York; 212/645-4977, fax 212/924-9817.

•11th annual Hong Kong International Lighting Fair; November 3-6. First China Lighting Fair, March 16-19, Guangzhou. Contact Headway Exhibitions, 212/889-9393, fax 212/889-0515.

•The LDI94 entertainment-lighting show takes place November 18-20 Reno, Nevada. Call 212/229-2965, fax 212/229-2084.

•A "Biologic Effects of Light" forum takes place in Atlanta October 9-11, 1995. Abstracts are due early in 1995. Contact Dr. Michael Holick 617/638-4545, fax 617/638-8882.

Publications

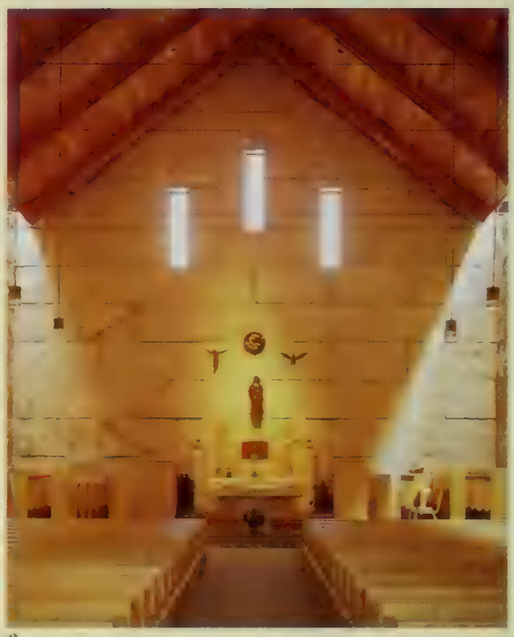
Among new IESNA documents: Luminaire Symbols on Lighting Design Drawings, Colorimetry of Light Sources, Electrical and Photometric Measurements of HID Lamps, and Lighting Metrics. Call 212/248-5000, fax 212/248-5017. ■

IALD Honors Eight Projects and Awards A Surprise Special Recognition



Steven Hefferan

1



James F. Wilson

2



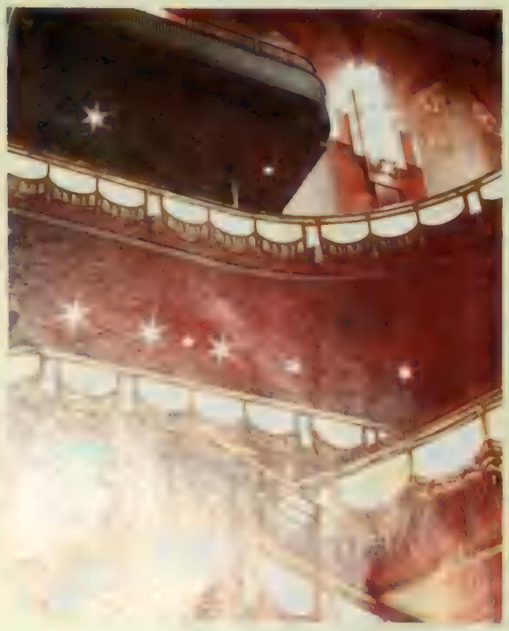
Ashley Ranson

3



© Timothy Hursley

4



Bobby Cohen

5



6

Nine projects out of a field of 98 have won the 11th annual International Association of Lighting Designers (IALD) Awards. The Awards of Excellence were won by the Cistercian Abbey *(2)*, Irving, Tex., with lighting design by Pamela Hull Wilson, Dallas, and the Arms and Armor Hall Renovation *(1)* at New York City's Metropolitan Museum of Art, with lighting design by Steven Hefferan Lighting Design, Boulder, Colo. The program is open to all, regardless of IALD membership.

Citations were won by six projects: St. Mark's Bookshop *(3)*, New York City, lighting design by Gary Gordon Architectural Lighting, Inc., of New York City; NationsBank Corporate Center *(4)*, Charlotte, N. C., with lighting design by Francesca Bettridge and Steven Bernstein of New York City's Cline Bettridge Bernstein Lighting Design; St. Patrick's Seminary Chapel, Menlo Park, Calif., with lighting Design by Ross De Alessi Lighting Design of Portola Valley, Calif.; Prince Edward Theatre *(5)*, London, lighting design by Andre Tammes and Roland Chadwick of the Lighting Design Partnership of London; Scripps Crossing Pedestrian Bridge *(6)* at the Scripps Institute of Oceanography in La Jolla, Calif., lighting design by San Diego architect Taal Safdie; One Peachtree Center Office Tower, Atlanta, lighting design by Howard Brandston, Robert Prouse, Randy Sabedra ,and Heidi Galassini of H. M. Brandston & Partners, Inc., New York City [RECORD LIGHTING, February 1994, pages 32-35].

In a highly unusual move, the IALD announced a Special Recognition for "Eight Lights" in Halifax, Nova Scotia, by sculptor Adam Thom of Lotohi Design of Toronto.

The IALD awards jury consisted of Helen Diemer of the Lighting Practice, Philadelphia; Philip Gabriel of Gabriel/design, Ottowa Candace Kling of C. M. Kling and Associates Alexandria, Va.; New York City architect Jack Travis; Lee Waldron of Grenald Associates, Philadelphia; Kevin Walz of Walz Design, New York City; and Kenneth Yarnell of the Kling-Lindquist Partnership, Philadelphia.

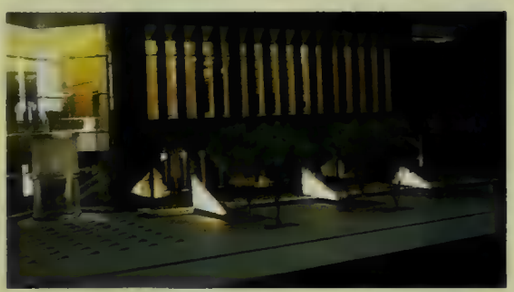
Paul Marantz of Fisher, Marantz, Renfro, Stone, New York City, and David Mintz of David A. Mintz, Inc., New York City, were inducted as IALD Fellows.■

Houston

Necklaces of Light Crown Renovated Skyscraper

xtensive renovations on a downtown office uilding that will become the new headquar-rs of Houston Industries, Inc., (including s subsidiary Houston Lighting & Power) clude a lighting design by Fisher, Marantz, enfro, Stone aimed at creating a skyline resence while avoiding an image of profli-te energy-use on the part of the client ility. The renovations by Keating Mann rnigan Rottet will be capped by a flat nopy with a huge circular cut-out open to e sky. To distinguish the building on the on-lit skyline, a necklace of 150W metal lides will sparkle around the circular ening; 1000W metal-halide uplights will centuate the canopy form. The rest of the ilding (shown here in an early floodlit odel) will be dark down to the lobby level, ere light picks up once again. Silk trees ll replace line ones in the lobbies because, as Alicia Kapheim of FMRS puts it, "the best lights for growing trees don't make people look too wonderful;" 500W PAR56s will light both people and the artificial flora. A circular ceiling cove echoing the roof cut-out will be outlined in fluorescents for nighttime security. Wall washers will make high narrow pale walls pop from dark curved segments lit by standard lensed wall washers. Outdoor skylights over a cafe will have a line of cold cathodes along one side. ■





Aker/Zvonkovic photos

New York State

ight Reading rom Rensselaer

nong the latest crop of publications from e Lighting Research Center at Rensselaer lytechnic Institute in Troy is the first ELTA (Demonstration and Evaluation ghting Technologies and Applications) rtfolio." The $6 case history of the A & P permarket in Old Lyme, Connecticut, ludes customer and staff responses; later e histories will cover healthcare, hospitali-offices, retail, schools and manufacturing. ner new works include an updated specifi-report on electronic ballasts; an ht-pager on office lighting; and "Light nversations," a 43-page booklet in conver-ion form on lighting quality featuring hting Research Center director Mark , manager of design applications Naomi ler, head of research and development in nan factors Peter Boyce, and a fictional ory CEO. Call 518/276-8716. ■



The first "DELTA Portfolio" from Rensselaer Polytechnic Institute is a supermarket-lighting case history.

Oregon

Unintended Irony Lightens View of Infamous Skating Rink





As the Olympic saga of Tonya Harding and the attack on Nancy Kerrigan's knee unfolded earlier this year, much of the TV commentary took place against a backdrop of four 30-ft fiberglass evocations of Old Man Winter blowing an icy wind across the skating rink at the Clackamas Town Center where Harding practiced. The sculptures, based on a concept by John Gish, a designer at the Callison Partnership, and fabricated in differing transparencies that mimic ice, were illuminated by the San Francisco office of Horton Lees. A band of adjustable lighting track, containing PAR38 halogens with ice-blue filters, circles the top of each column and shines down the inside of the figures as well as outward through the locks of their hair; the flowing hair also conceals relamping catwalks accessible from above the ceiling or from exterior lifts. Similar tracks circle the more durable glass-block pedestals. The high-bay pendants over the rink were relamped with much higher color-rendering and somewhat warmer lamps. Teal Brogdan at Horton Lees says the specular aluminum panel ceiling is an ice-rink norm. ■

Outlook For Fluorescent Dimming Brightens

By Lindsay Audin

Incandescent dimming has always been easy, cheap, and effective in creating moods and highlighting presentations. Stricter energy codes and rising power costs may limit such installed wattage, however, making incandescent lamps less welcome in the future. Nevertheless, those same codes (such as ASHRAE 90.1 and California's Title 24) encourage dimming as a viable way to achieve acceptable power densities and cut utility bills. Dimming fluorescent lighting then becomes an obvious way to kill two birds with one stone.

Perceptions change as lights go down

The human eye is a tricky thing: reduce light levels, and the pupil compensates by opening wider to accept more light. Making a space look half as bright, for example, means cutting footcandles by about 75 percent. Darkening for screened presentations requires a 90 percent drop; adjustments for VDT operations, on the other hand, may need only a 50 percent reduction.

Color perception also changes as spaces become darker. Different color receptors in the eye (more sensitive to blue than red) become active, so the range of visually acceptable color temperature narrows and slides toward warmer tones (see graph, opposite). When dimmed, incandescent lamps shift toward red (appearing slightly warmer), thus accommodating the eye's needs to some degree. Colors from fluorescent phosphors remain stable, however, which may make spaces lit by 4100K cool-whites look cold and dull when they are dimmed. Similarly, compact fluorescent lamps may appear bluer because a larger proportion of their light emanates from their cathodes (which give off a blue glow) during dimming.

Field experience with higher color rendering index lamps, such as triphosphor T8s, further reveals that pastel colors may appear to distance (e.g., from pink toward manila), when dimmed to about 7 fc, to the possible chagrin [illegible]. While acceptability

[illegible] *manager for* [illegible] *lighting energy* [illegible] *Colorado-based* [illegible]

cannot be determined as precisely as implied by the graph, these effects may be muted by specifying "warmer" fluorescent lamps. As shown, 3000K is generally acceptable between about 10 and 50 fc (a typical dimming range), while 3500K lamps work well between about 20 and 200 fc, too high for most dimming applications. Such changes are generally not a problem where neutral colors or gray tones prevail, but showrooms or executive suites may benefit from a test with different color temperature lamps to find the best choice across the dimming range.

Dimming methods

Incandescent lamps are dimmed by reducing voltage or chopping off a portion of the power wave, but reducing the light output of fluorescent lamps requires a bit more finesse.

Two methods are used for dimming magnetic ballasts. The first reduces power to standard ballasts, wired in series with a potentiometer, dropping light output to about 40 percent for rapid-start T12s, and 20 percent for high-output (HO) lamps. The second method uses dimmable ballasts equipped with separate low-voltage leads that respond to control signals from an electronic dimmer, bringing levels down as low as 10 percent. Dropping lower (by either method) may result in flicker or early burnouts.

Dimmable electronic ballasts (EBs) also come in two varieties: energy management (or "standard dimmable") units that go down as low as 20 to 25 percent, and "architectural dimming" EBs that typically can go as low as five percent (though Lutron claims a minimum output as low as one percent). In both types, dimming is accomplished by controlling the ballast's rectifier (which provides high-frequency AC power to the lamp) through separate leads between the wall dimmer and ballasts.

Electronic versus magnetic dimming

Dimmable EBs are often better than magnetics for a variety of reasons:

- Noise. Unlike magnetics, which may jump from a Class A sound rating to a Class B level hum when fully loaded EBs remain quiet when dimmed, a major plus for media and conference rooms.
- Power factor. EB power factor remains at .85 or above while magnetics may drop to .5.
- Size. Most EBs fit into standard-size casings, while each magnetic unit requires a power controller next to it, increasing total size, weight, and cost.
- Efficiency. When dimmed to the same level, EBs provide as much light as magnetics but use less power doing so.

Matching choices to needs

Many dimming options are available, but not all are appropriate to every application. If esthetics are the sole criterion, for example, continuously variable ballasts dimmable dow to 5 percent or less are probably the best choice, using quiet electronic ballasts. On th other hand, some media and conference rooms may find step-dimming an economica and acceptable alternative. When energy management (through daylighting, lumen maintenance, or demand limiting) is the goa several other options are available at a lowe cost, with solid-state ballasts once again being the best choice.

Daylighting systems measure daylight entering a space and supplement it with jus enough electric light to maintain an accept able level, minimizing energy use in the process. A lumen maintenance system, on t other hand, compensates for output losses due to lamp-phosphor depreciation and fixture degradation from dirt buildup. Energy is saved by avoiding the excessive power consumption common to lighting designs that (until lamps and fixtures

New ballasts for fluorescents make dimming for lumen maintenance, daylighting, or demand management readily available.

As incandescent dimming becomes somewhat less desirable, more fluourescent dimming options are available. That makes knowing what system your project requires more important than ever.

legrade) provide more light than needed. Demand-limiting systems are usually confined to spaces where light levels can be lowered without creating problems, such as corridors and storage areas.

tandard electronic dimming ballasts (with 0 percent minimum output) work well in aylighting and lumen-maintenance ystems; their ability to gradually dim avoids ling occupants to the fact that less light is eing emitted by the luminaires. While only arginally more expensive to install in new nstruction, they may, however, be costly erkill when used solely for energy management in existing facilities.

ess expensive options are available without e extra wiring needed by the others. The st is a variable voltage control originally signed for HID ballasts by Peschel Energy, c., that works with many (but not all) norally non-dimmable electronic ballasts. By opping the input voltage without corrupting the power sine wave, this device reduces ht output to about 40 percent, and wattage nearly the same level. Several cautions ply when considering this type of control. st, its success varies with the ballast del and line voltage—and, using it may ect the ballast warranty. Second, it won't rk on ballasts that compensate for reduced tage by drawing more current. As a result, s perhaps most appropriate for limiting nand in existing lighting installations, and lumen maintenance, which rarely requires ming below 60 percent.

econd choice is the recently introduced p-dimming Varitron system by Electronic last Technology Co. (EBT). It sends radio nals through powerline wiring from a wall troller to dimmable EBT ballasts that e 100- , 75-, 50-, 25-, and 9-percent output els. Designed primarily as a retrofit to ting installations (and presently limited -lamp varieties), models are available for or T8 lamps, 120V or 277V, using only ting wiring. The wall controller replaces present switch or dimmer; no additional ng is involved, though a neutral wire is led for the controller, as is typical.

ird option (limited to T12 lamps) is the netek bi-level ballast, designed to comply with state codes calling for two levels of lighting. Switching it once yields full output, while switching again drops output to 50 percent

The usual caveats apply

Reliability. The market has seen models and makers come and go in the last few years, so users are cautioned to stick to reliable manufacturers with a wide product range.

Energy use and power quality. Wattage and light level drop linearly for both the Advance and Mark VII systems down to very low levels, but power consumption for the Varitron and Peschel options tends to level off as light levels drop. While total harmonic distortion increases as lamps are dimmed, it also starts at a low level in most dimmable electronic ballasts, so net impact (such as power on neutral wiring) is minimal. The Magnetek bi-level ballast starts out greater than 20 percent, however, making it unacceptable to many utility rebate programs.

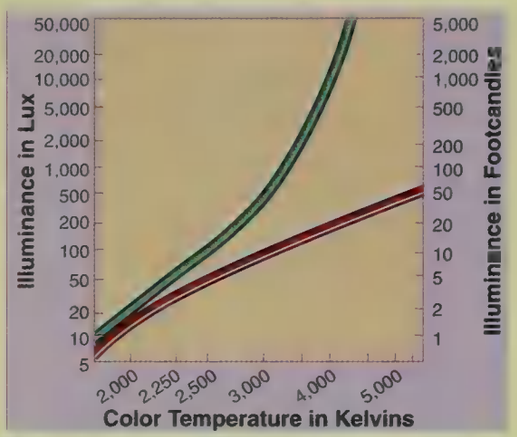
Lamp Starting. Rapid starting is typical, meaning that failure of one lamp shuts off both served by a two-lamp ballast. Most lamp manufacturers feel that lamps should be started at full output and then dimmed, rather than starting at the dimmed level, in order to maintain lamp life. Some dimming systems do not adhere to this credo, so users are advised to consider lamp life when specifying a particular dimming system.

Installation. As with any new solid-state equipment, installation may also be tricky. An examination of the instruction sheets for several products turned up some novel requirements. One maker even states that its warranty may be voided if lamps are replaced while power remains on! When was the last time you saw relampers working in the dark?

Temperature. Some dimmable EBs get rather warm when operating at low levels for long periods, resulting in shortened life, especially when enclosed.

Watching your pennies

Estimating the cost of adding dimming to an existing space requires close attention to costs for electrician labor and dimming controls. Depending on the system and local code requirements, one dimming ballast may make more economic sense than another as some ballasts require more wiring than others. The Advance Mark VII, Lutron, and Varitron ballasts all have leads that run back to line neutral, and the appropriate control box with other leads going to lamps. The Advance system uses two low-voltage leads in addition to the usual line-voltage wires. Connecting a Lutron ballast involves one extra line-voltage lead. The Varitron ballast has only the usual pair of line-voltage leads, which attach to those already in the ceiling.



As spaces darken, different color receptors in the eye become active, sliding the range of perceptible colors toward warmer tones.

Control devices for each dimming system may also impose subtle costs on a design: all are limited in the quantity of ballasts they may serve, and some group those loads more cost effectively than others. Each Varitron wall controller, for example, is limited to two 16-lamp ballasts, while the Lutron Microwatt system handles larger loads by using two levels of controllers. Dimmers may also be limited to one brand of ballast, limiting the ability to bid the job. Estimates on retrofit jobs using union labor found significant differences in the installation costs for these options.

Conclusion

While dimming for electronic ballasts is still in its developmental stages, the present options provide creative ways to control fluorescent light levels. Smart designers will find many opportunities to make their work stand out by taking advantage of this new technology. ■

New Low-Glare Task Lighting

Peerless Lighting has just introduced a task lighting system that can be used with most major furniture systems as well as architectural applications. The company spent three years tackling the thorny task-lighting problem. Peter Ngai, Peerless's vice president of research and development describes their objectives, saying, "Our experience showed that traditional task lighting systems produce overly bright, high-glare task areas inconsistent with the objectives of a good overall visual environment. What users need is a system that comfortably supplements overall room lighting, instead of bombarding the work surface with high levels of illumination and glare."

The new Peerless system does this by using a complex prismatic lens and reflector system (4) tucked into a shell of either extruded steel or aluminum. The system spreads the light out evenly, producing truly low levels of direct, veiling, and reflected glare, as well as surprising uniformity on the work surface and back wall. It creates almost no glare compared to other supposedly glare-free systems I looked at, which created uncomfortable brightness both at the light source and on the task!

The Peerless task light uses a standard T8 lamp, but they have chosen a 65-percent output electronic ballast as standard equipment in all products designed for use in systems furniture. This is a good choice for most applications, and it saves energy. Dimmable or standard ballasts can be specified if more light or user control of light levels is needed.

Aside from its optical performance, the new system can be used in many different situations. The steel version can be used in under-shelf and under-cabinet applications (2, 3), and the extruded-aluminum version (1,5) doubles as high-strength shelving. It can be secured to panels, Unistrut, or walls using discreet brackets. The product also has a built-in raceway that permits wiring of connections of lamps, computer cables, and other [illegible] applications. *Charles Linn* [illegible] Corp., Berkeley, Calif.



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© John Sutton

Luxurious Ambient Fixtures: Silk Tassels and Gold Griffins

An architect by training, Sandy Littman appreciates the impact a very special light fixture can have in an otherwise undistinguished space. And although she maintains that her imaginative pendants and sconces are not based on historical documents, the newest collection—shown here—sure *looks* Empire!

Making heavy use of the New York-based firm's trademark white-opal glass, the new line also includes hand-painted ceramic bowls in shades of black, white, celadon, and peach, as well as cobalt-blue glass. Pendant fixtures are suspended by heavy silk ropes in a range of colors, silk tassels dangle from basses of gold-toned brass, and silk trimmings decorate opulent canopies.

The star of Littman's show are her uplights, wide glass bowls in white, cobalt, or hand-painted glass. Some are sprinkled with gold stars; all are suspended by pure-silk ropes. Other pendants and sconces demonstrate her affection for lyres, stars, mythical griffins, and other Classical elements. The collection includes more restrained sconces, not shown, that incorporate gold-brass and black-onyx details in ADA-compliant configurations. Littman's fixtures meet code for commercial and hospitality applications as well as residential use. Though definitely at the upper end of the price range, volume orders are discounted. Each piece can be custom designed in any combination of glass color, cording, and metal finish—or plain, like the Bonaparte sconce without tassel, 4. Compact-fluorescent lamping is an option for larger orders; incandescent sources are standard for most of the fixtures shown here. The American Glass Light Company, New York City.
Circle **209**

Harrison uplight, 24- and 36-in. widths.
Harrison uplight detailed with three pairs of winged griffins.
Pierpont uplight with a gold bowl and applied blue stars.
Bonaparte sconce in butler- silver finish.
Martel sconce in gold-brass. Available with shades.
Eliza sconce with convex mirror.

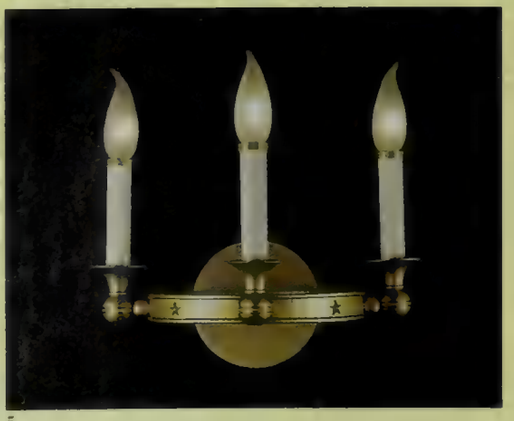
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Smart Lighting Systems Brighten Up Two University Lecture Halls

By Douglas W. Cray

There is widespread evidence that faculty in universities and secondary schools are expanding their chalk talks to include an array of newly developed audio-visual teaching aids. The new 150-seat James McDonnell Hall at Washington University, St. Louis, and an extensively renovated and redesigned 75-seat lecture hall at the Massachusetts Institute of Technology, Cambridge, Massachusetts, illustrate two lighting-design approaches in facilities that differ in size, function, and complexity.

Bechtel Lecture Hall at MIT (below) was originally a drafting room, converted in the 1930s to a lecture hall. In June 1992, it was gutted and in January 1993 reopened, in the university's words, as a "state-of-the-art" lecture hall. State-of-the art here finds the hall transformed into a windowless multi-media-driven facility where a sufficiently trained lecturer may spellbind audiences with images from a Unix workstation, video tape, film, laser disk, CD-ROM, MIT Cable TV, laptop computers (each of the 74 seats has power hookups for computers) and 35mm slides—not to mention the traditional chalk. The new facility was established in part by a gift from Stephen D. Bechtel Jr., chairman of the board of the Bechtel Group, Inc.

Given their academic setting, the two halls do have much in common beyond blackboards and contemporary a/v equipment. Seating layouts, sight lines, and lighting in both halls spare attentive lecturegoers the struggle of trying to take notes in the dark. A hybrid, dual system mix of ceiling-mounted fluorescent and easily dimmable incandescent downlights are the core components of the lighting design in both halls. Lighting designer Jeff Berg notes that while a fully dimmable fluorescent system was preferable, at the time of construction the incandescent/fluorescent combination was judged better in terms of first cost and energy efficiency.

Two lighting systems

At Bechtel (section this page), general illumination is provided by three rows of fully-indirect T8 2-lamp fluorescent fixtures, which alternate with rows of quartz PAR downlights recessed into the ceiling. The indirect fixtures were chosen to minimize screen glare on laptop computers. A row of adjustable incandescent accent lights illuminates the lectern/demonstration area, and halogen fixtures fitted with barn doors to control glare light the chalkboard. Walls are

Bechtel Lecture Hall,
Massachusetts Institute of Technology
Cambridge, Massachusetts

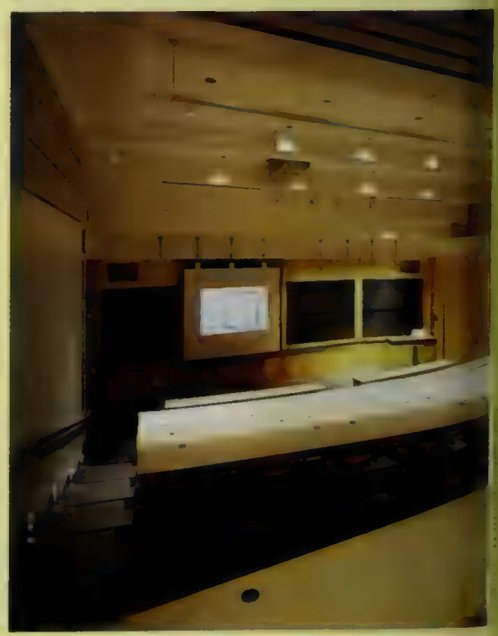
Architect: *Amsler Woodhouse MacLean, Architects; Gail Woodhouse, project architect*
Lighting designer: *Berg/Howland Associates; Jeff Berg, project designer*
Contractor: *Travi Construction Corp.*



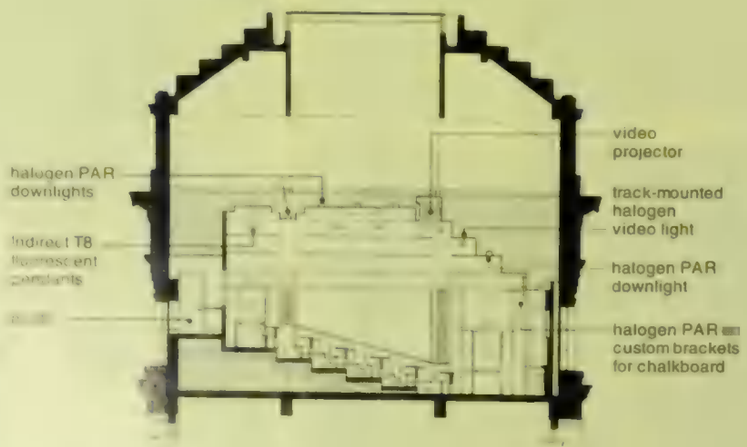
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A pair of university lecture halls employs sophisticated but user-friendly dimming systems, so proper lighting can be chosen for any presentation media—from cable TV to laser disk.

dotted by circular sconces. In order to fit the specified fluorescent indirect pendants into Bechtel's coffered ceiling and eliminate any possible noise interference, ballasts were installed above the ceiling, and the fixtures were manufactured to match the coffer dimensions.

At McDonnell (section this page), seven rows of direct/indirect T8 fluorescent 2-lamp pendants provide general lighting. Interspersed between these fixtures are 150W quartz incandescent downlights for use during a/v presentations. An average of about 50 fc of illumination is provided at seat level. Recessed fluorescent wallwashers and 250W quartz track lights recessed in a ceiling slot at the front of the hall provide additional illumination for blackboards and demonstrations that may be set up in the front of the hall. A floor-to-ceiling window at the left front of the room provides daylight for the full height of the room. A black screen may be lowered to seal off this light source whenever the hall is set up for an a/v presentation.

Integrated lighting and a/v controls

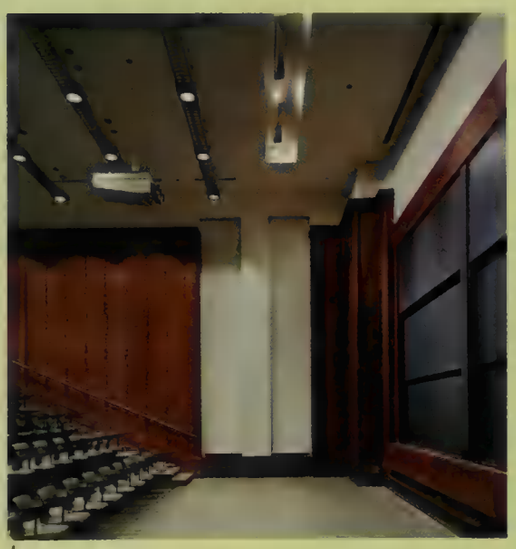
A customized control panel at the lectern in both projects permits a seamless transition between presentations with video, slides, computers, or chalkboards while maintaining excellent visibility. A lecturer in either hall may choose one of several preset lighting scenes or, maestro-like, may temporarily override selected elements of a scene to suit the occasion and personal style. All a/v equipment is controlled from the same panel as the lighting, as is the motorized daylight screen in the case of McDonnell Hall. At Bechtel, six preset lighting scenes are available to lecturers. Full illumination note taking (1,2) and an a/v scene with note-taking and chalkboard lights on (3) are shown below.

At McDonnell, four presets are available, including the traditional chalk-talk, with fluorescent lights on full for reading the boards and notetaking (6); an audio-visual presentation with the projection screen down, blackout shade drawn, and the incandescent downlights on and dimmed for taking notes (5); and a guest lecture (envisioned as more of a performance than a lecture) with the incandescent downlights and track lights on (4). About all these lecture halls won't do is keep students from napping in class. ■

Doug Cray is a freelance writer who lives in Newburyport, Massachusetts.

ames S. McDonnell Hall
Washington University
t. Louis, Missouri

rchitect: *Kallmann McKinnell & Wood, Architects; Rayford Law, project designer*
ighting Designer: *Berg/Howland Associates; Jeff Berg, project designer*
ontractor: *BSI Constructors*



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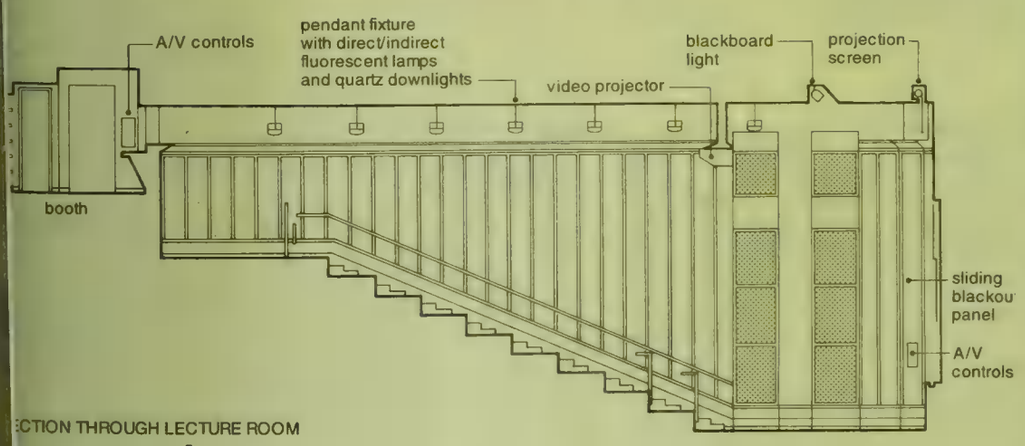


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Flos Introduces ADA Collection



Flos Inc. has introduced twelve new low-profile, energy-efficient wall sconces which comply with ADA guidelines for a maximum 4" depth. All are U.L. listed and several are designed for use outdoors in wet locations. "Rackette", shown here, has a die-cast aluminum body with a green, grey or white polyester resin finish, pressed glass diffuser and incandescent or fluorescent lamping. Specification sheets available, call 516-549-2745 for further information.

Flos, Inc.

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Avoid Annoying Glare 10 to 1 MH Spacing



Hydrel's new 9600 Series Recessed Wall-Step Lights with improved beam patterns and unique internal glare control achieves remarkable 10 to 1 mounting height to spacing ratio. Patented sealing technology and modular construction provide air cooling for reduced size and simple installation/maintenance. Up to 100 watts HID.

Hydrel

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Control Station Brochure



Say goodbye to unsightly banks of toggle switches and wall box dimmers! Up to eight switches for dimming and preset scene control can be housed in a single gang space. Vantage stations are fully programmable and available in a variety of colors and finishes to complement any decor.

Vantage Controls, Inc.

Circle 74 on Inquiry card

Introducing New Fiber Optic System



Lighting Services, Inc. has introduced a new fiber optic system comprised of a remote light source (illuminator), "tails" or bundles of light carrying glass optical fibers (harness), & lighting instruments (lightbars & fixtures). LSI fiber optic lighting is ideally suited for conservation & lighting of museum cases, heat sensitive objects that benefit from the cold light in retail cases, & for accent & mood lighting in commercial & residential settings. Please contact Lighting Services, Inc. for a full color Fiber optic lighting brochure. (914) 942-2800.

Lighting Services, Inc.

Circle 75 on Inquiry card

High Performance with Uniformity and Control

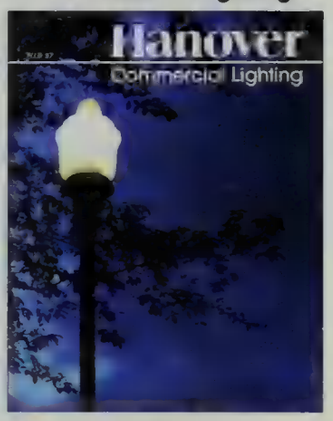


Hydrel'S 7100 Series Architectural Lighting System provides high performance with maximum uniformity and control. Eight standard light distributions. Standard Internal glare control. Multiple mounting capabilities. Contemporary styling to complement any architectural statement. Up to 175 watts HID.

Hydrel

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Hanover Lantern designs & manufactures high quality heavy duty cast titanium/aluminum commercial grade decorative lighting fixtures, poles & accessories. A selection of design styles, light source options, light distribution systems, mounting options, computer generated photometric data plus a custom design service are available to the architect or engineer. 470 High St., Hanover PA 173331. Phone (717) 632-6464, fax (717) 632-5039

Hanover Lantern

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Product Literature Spotlight

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EXCITING LIGHTING



Ceramalight™ proprietary ceramic formulations that endure the test of time
Design copyright and trademark registered wall sculpture that lights up any room
Details unique kiln fired glass and hand painted finishes that truly stand out
ADA low profile wall lights designed for safety in all public common areas
Outdoor lights with a new look. UL listed for wet locations including direct falling water
No Sharp Edges eliminates risk of accidental wounds and injury from fixture contact
Easy to Clean surface that resists corrosion and deterioration from the environment
Unlimited selection over 3,000 choices
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Justice Design Group, Inc.

Circle 78 on Inquiry card

Light Your Room by Lighting the Walls!

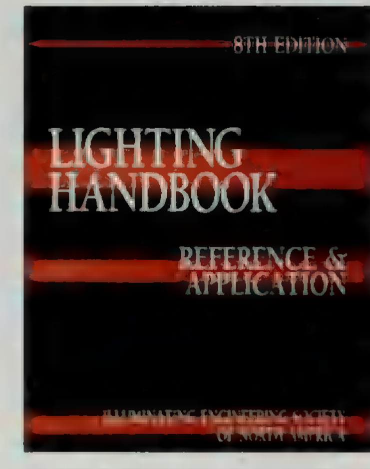


Add drama to your space by lighting surfaces such as walls or ceilings. Our versatile, shallow Wall Washers can also be recessed into standard walls to light the ceiling or floor. We offer a variety of lengths to accommodate most PL, Quad, Biax and T-8 lamps. These efficient, long life fluorescent lamps within our patented reflector system provide volumes of excellent color rendering light.
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Engineered Lighting Products

Circle 79 on Inquiry card

IES Lighting Handbook



Lighting handbooks published by the Illuminating Engineering Society of No. America are acknowledged as the standard lighting guide. New 8 Edition contains the latest technology, terminology & acceptable lighting standards & applications in today's energy efficient environment. Highlights include the '93 codes & regulations, elements of design & the design process, illuminance selection procedures & software for use with lighting economic calculations!

Illuminating Engineering Society

Circle 80 on Inquiry card

MARINER III Series

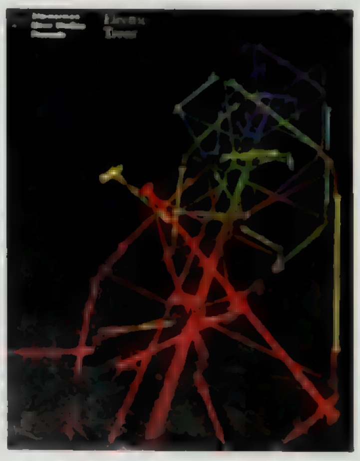


Eclipse Lighting, Inc. introduces the MARINER III Series. A decorative, durable and energy efficient solution for compliance with the new ADA standards. Featuring three attractive sizes for indoor or outdoor use. Lamp sources include Incandescent, PL and HID. Also available in tamper-resistant models. Custom inquiries welcome. For complete information: Eclipse Lighting, 1259 Wood St., Chicago, IL 60622. Tel: 312/862-0802; Fax: 312/862-1138.

Eclipse Lighting

Circle 81 on Inquiry card

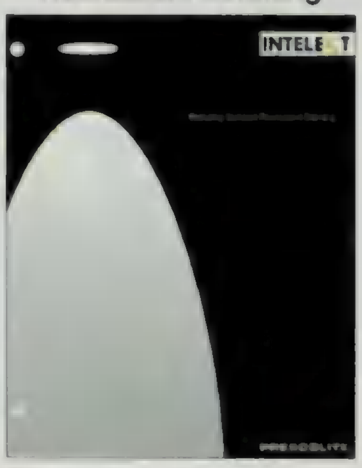
Electric Trees



This brochure introduces Electric Trees, a creation of neon artist Eric [illegible]. Each Electric Tree is an original neon sculpture whose elements may be adapted to the needs of specific projects. The neon [illegible]

[illegible] Lighting

Intelect Compact Fluorescent Dimming



Expensive compact fluorescent dimming is history, thanks to the new, advanced Intelect™ system from Prescolite. Using breakthrough patented integrated circuitry, the Intelect ballast delivers flicker-free dimming for superb aesthetics. Exceptional performance (low THD, high power factor, etc.) is featured with full architectural dimming to 5%. For more information, please fax Keith Bahde, Prescolite, (510) 577-5022.

Prescolite

Circle [illegible] on Inquiry card

Bowl Fixtures

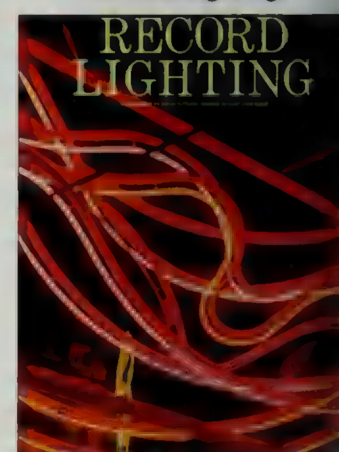


NL Corp. introduces an exciting new collection of bowl fixtures, consisting of matching pendants, sconces & ceiling mounts. Fixtures are available in many styles, finishes & colors with sizes ranging from 18" to 96" in diameter. Several distinctive acrylic finishes are shown & all fixtures can be furnished with energy saving HID, or Compact Fluorescent light sources. Mix & match bowl styles, stems, acrylic & lamps, and as always, the difference is custom.

NL Corporation

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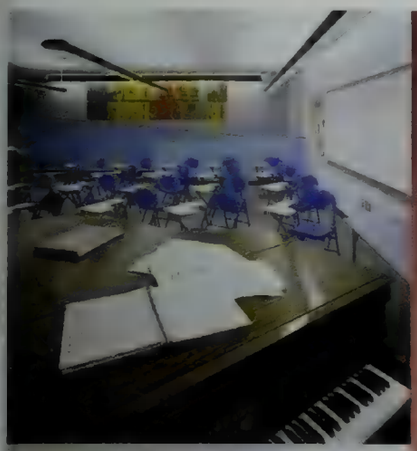
Back Issues of Record Lighting



Add to your files by ordering back issues of RECORD LIGHTING, the exciting color supplement to Architectural Record. The price per issue is only $3.50 each (includes postage and handling). Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

Record Lighting

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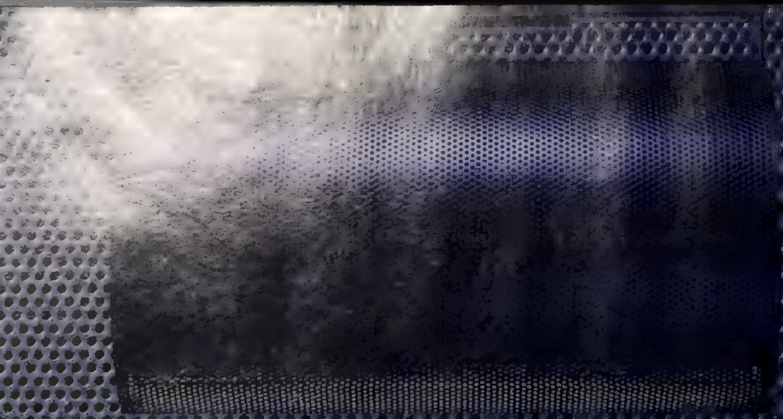
LC-91

LC-91 is an extremely high-efficiency linear fluorescent system, available in direct/indirect and indirect versions. The two-part reflector design, incorporating a semi-specular, low-iridescent baffle, generates a superior light distribution. So, far fewer fixtures are needed to accomplish a given level of illumination. And, due to its softened elliptical cross-section, LC-91 quietly and gracefully presents an unobtrusive, refined appearance, for classrooms, laboratories, offices, and libraries, among other appropriate applications. To receive LC-91 literature and technical specifications, additional information, or the name of your local Litecontrol representative, call (800) 852-3455. Specify Litecontrol, for lighting that works, and lighting projects that work.

op & Middle Left: Lowell Public Schools, owell, MA. **Architect:** Drummey Rosane nderson Inc. **Engineer:** Shooshanian ngineering Associates, Inc.
itecontrol continues its firm commitment accepted sound **environmental policies nd practices** in design and manufacturing.
itecontrol Corporation, 100 Hawks Avenue, anson, MA 02341, (617) 294-0100
)1994

LITECONTROL

20



Echo

To provide a controlled wash of illumination across a plane. To transform shadow into highlighted detail. To put the true versatility of indirect asymmetric lighting into a word: **Echo.**

Echo is three sizes with multiple lamp types and wattages.

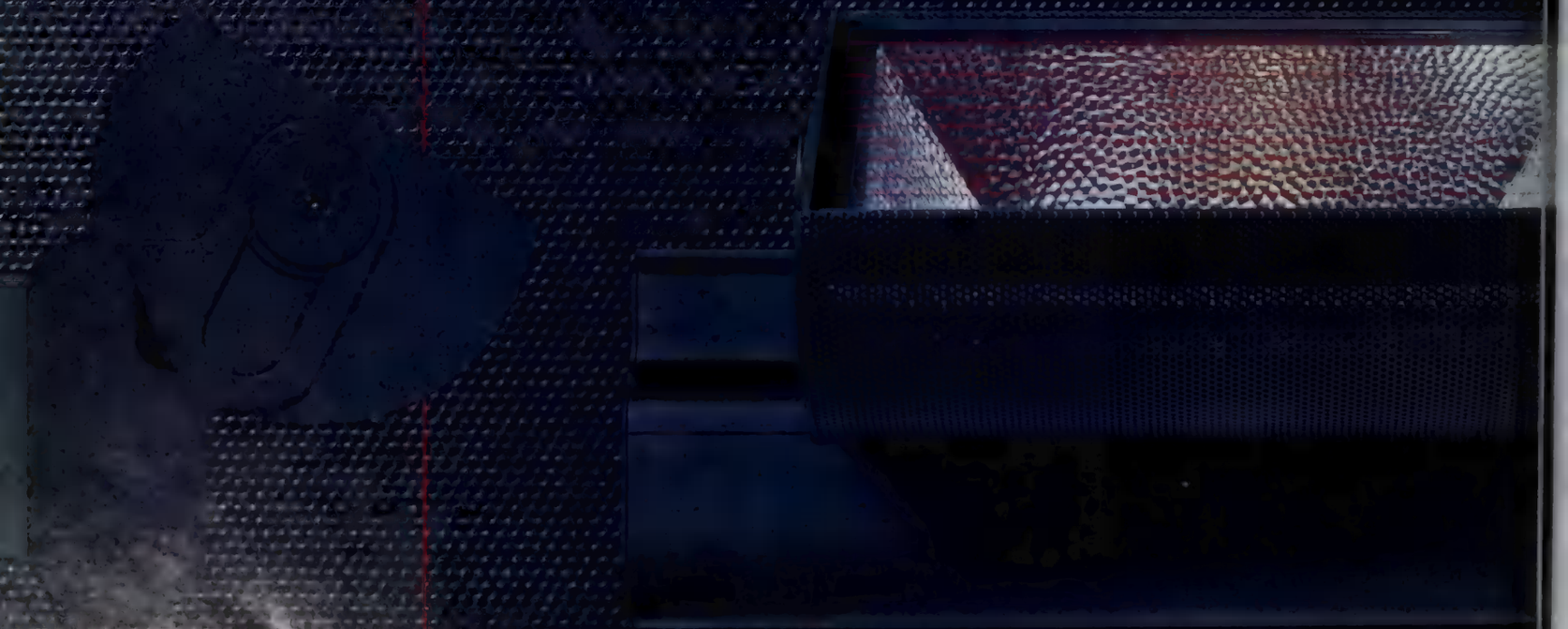
Echo is wall, ceiling or pier mounted with integral or remote ballasting.

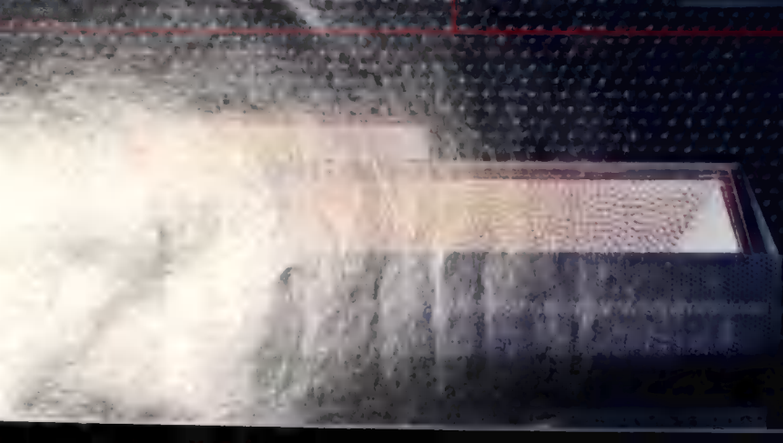
Echo is superior optical performance and safe, cool operation.

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Circle 89 on inquiry

Breaking the HPS habit

Recently I received a letter from Peter Coxe, a lighting designer and architect from Marblehead, Massachusetts. Coxe admonished me to remind readers of the benefits of metal-halide lighting for streets and exterior spaces, and as supporting evidence, sent along a copy of an item from "The Talk Of The Town" that ran in *The New Yorker* last fall. The item bemoaned the use of yellow light bulbs in streetlights—that's HPS to us—and pointed out what a difference was made by the installation of poles that had "bluey white"—I presume they mean metal halide—lamps installed atop them.

The colorful copy made the effect of the metal halide sound like it is a tonic: "Walk down the block of West Fortieth Street between Fifth and Sixth just south of the New York Public Library any night after dusk, and within a minute you'll be standing straighter, breathing more slowly, seeing farther down the block, and giving yourself a little more time to get there." The article goes on to credit lighting designer Howard Brandston for helping raise money for lighting this stretch of street, and mentions that other blocks are to be converted to metal halide in the coming years.

The article brought to mind the work of the Lexington Lighting Options Committee, a citizen's group in Lexington, Massachusetts, that for several years has successfully resisted the conversion of Lexington's old incandescent and mercury vapor residential street lighting system to high-pressure sodium. They are trying to get funding for a comparative study of different energy efficient, high color-rendering sources that would be installed in a number of different luminaire types on the streets of Lexington. Some sources not widely used in street lighting, including low-temperature-rated compact fluorescent and color-corrected HPS, would be part of the study, as would operating and life-cycle costs, the appropriateness of different fixture types for specific locations, ballasting options, and so on.

The Lexington Street Lighting Demonstration Project was designed by Chris Ripman, of Ripman Lighting Consultants, in neighboring Belmont, Massachusetts, who has served as an unpaid advisor to the Lighting Options Committee for years. Ripman's project, if it ever gets funded, has the potential to influence residential street lighting decisions in thousands of communities across the nation. And wouldn't it just be nuts if some lighting manufacturers caught on that there is money to be made marketing high-ambience, non-HPS, residential-scale streetlighting products? This would seem to be an opportunity, as apparently part of the problem Ripman has run into is a lack of appropriate residential street lighting hardware that uses these energy-efficient, high-color rendering sources.

One thing that strikes me about the Lexington Lighting Options Committee is that they identified the ambience that comes from their incandescent street lighting as a community asset and fought to preserve it. They're willing to give up incandescent but not the ambience. It's wonderful to see people like the Committee members recognizing the value of light as a maker of their neighborhood's character, and overall, great to see people like Chris Ripman and Howard Brandston (and many other members of the lighting community) fighting the HPS-habit. *Charles Linn*

anufacturers' Sources
ted on page 41

Restoration Drama

St. Patrick's Seminary Chapel
Menlo Park, California
Richard Zlatunich, Architect
Ross De Alessi, Lighting Design



esigner Ross De Alessi uses new lighting in this 80-year-old chapel to reate seemingly translucent surfaces where no such surfaces exist. Only the stained-glass windows emit light from behind. The apparent nner glow that radiates from the apostles' faces ranked around the pse, the Stations of the Cross under the windows, the figures of the rand mural above the entry (overleaf, top) and indeed, to a lesser legree, from almost every surface in the room is, in fact, the product f the designer's artistry. The effect represents, in restoration architect Richard Zlatunich's words, "both the divine and the human, the angible and the intangible."

De Alessi and Zlatunich's work on the chapel had a three-fold urpose: to restore the finishes, to meet Vatican II's goals of bringing elebrants closer together, and to reinforce the visual quality of the pace and drama of the daily events that occur within it. The building nd its white-oak interior were originally designed by architect C. J. evlin in 1915. In 1918, 10 marble setters signed their names on a slip f paper and concealed it within the crowning altar as they completed . Ironically, it was removal of this altar that prompted this glorious estoration of the rest of the space. Because the rites of a seminary ress congregant interaction and participation to the point that seats ce across a central aisle instead of forward, the presence of a domiating altar was more out of place than it is in a normal Vatican II urch. Accordingly, seminary rector Gerald Coleman successfully ought permission from the archdiocese to bring the chapel up to ate—including dismantling the altar. Zlatunich designed a new, uch simpler altar closer to the seating, and an ambo or pulpit for rmons in the center of the room. Also crucial to the space's survival as fumigation of insects that were destroying the wood, replacement damaged parts (including entire wall panels), and the wood's cleang and treatment with lemon oil to restore moisture.

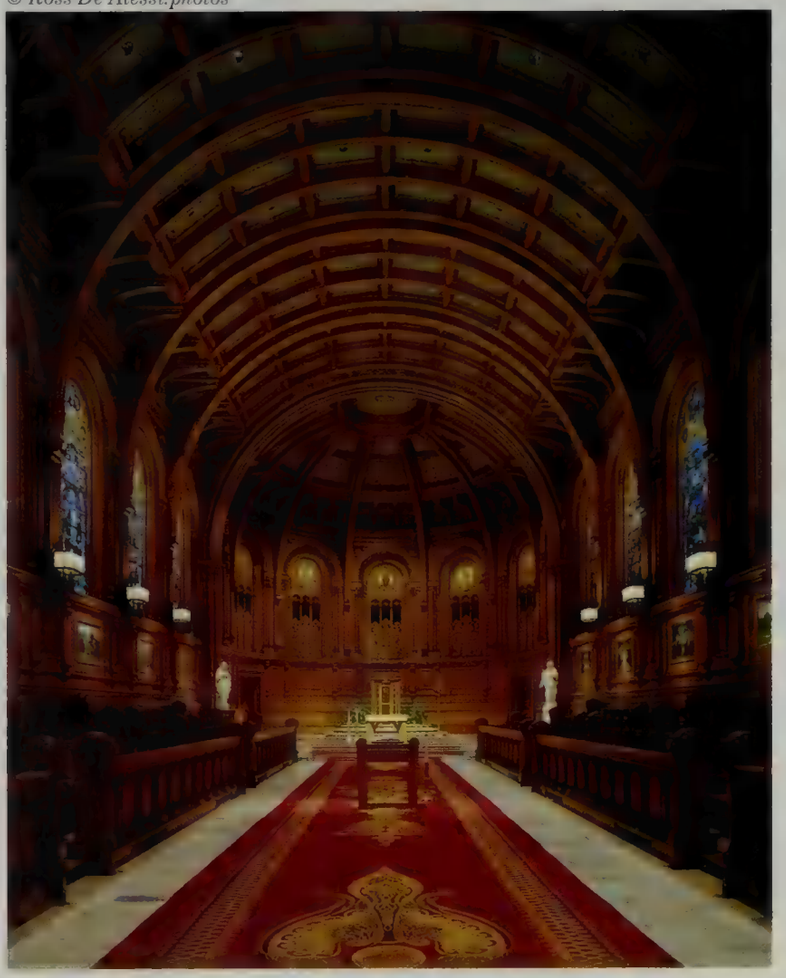
ut, beyond restoration, the seminarians wanted drama. And that is hat De Alessi gave them—complete with eight programmed lighting cenes," produced by the touch of a button, that glorify activities om Mass to evening prayer, to contemplation. Before De Alessi tered the picture, the seating had been lit only by 12 sconces that st a dim light downward making reading difficult. The sanctuary as lit by temporary lights on extension cords. The soaring arched iling was lost in gloom.

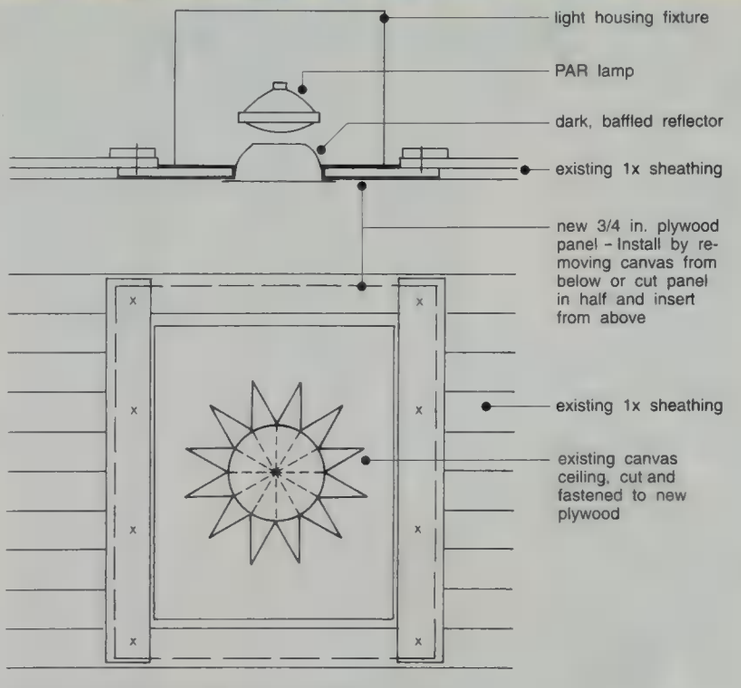
e Alessi took his cues from Yale professor Stanley McCandless who, rlier in the century, formulated theories for stage lighting, includg cross-lighting actors to heighten their three-dimensional esence. Such effects are not easy to achieve in a historic space, pecially when the clients' specific request was that the 12 original onces be the only visible source. "What clients really want," says De essi, "is light from nowhere." To locate it, he looked upward. Crawlg through the attic's 80-year-old dust, he found ample space to stall "dark lights"—fixtures with lamps deeply recessed 8-to-12 hes above the ceiling, and baffled with dark reflector cones. Most e 500-watt quartz PAR 56s for excellent color and long life, with riable beam spreads and dimming for both area and focal lighting. 111 PARs give the tight focus that creates the inner glow from Stations of the Cross.

try not to saddle clients with so many types of lights that they can't intain them," notes De Alessi, who provides maintenance person- with a reflected ceiling plan that tags each type. The project nforms to California's stringent Title 24 lighting requirements for rgy conservation and has won several awards.

arles K. Hoyt

© *Ross De Alessi.photos*

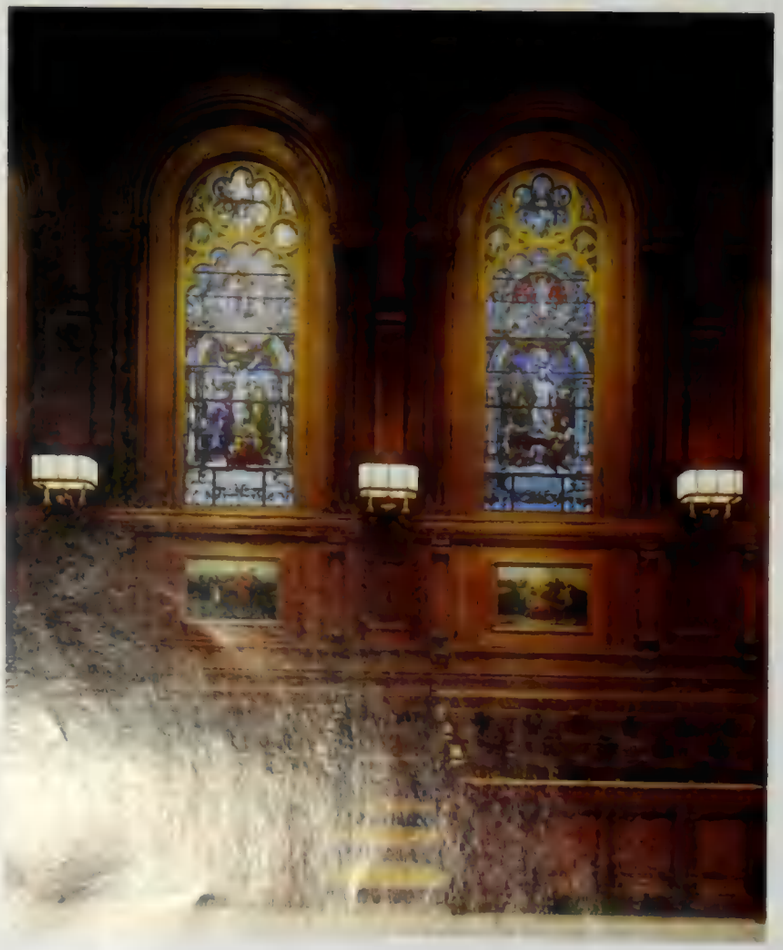




SECTION THROUGH FIXTURE AT CEILING

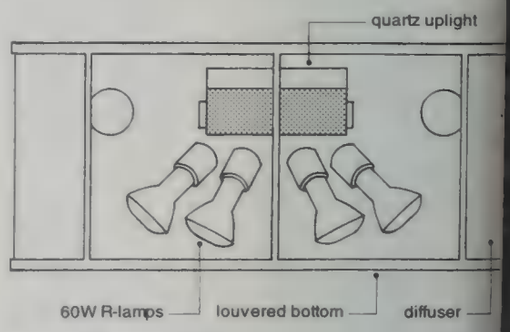
The builders used a 40-foot-high rolling scaffold to reinforce the stretched painted-canvas ceiling panels and then cut holes for the new light fixtures that would become the major source of illumination in the chapel.



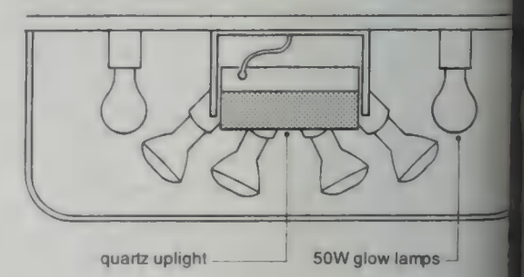


Old sconces hold new space-age lighting, including Q150DC miniature uplights that make the tracery above the windows seem to glow. The three-dimensional quality of the murals over the entry is enhanced by 85 CRI fluorescent wall-washers concealed behind the organ pipes.

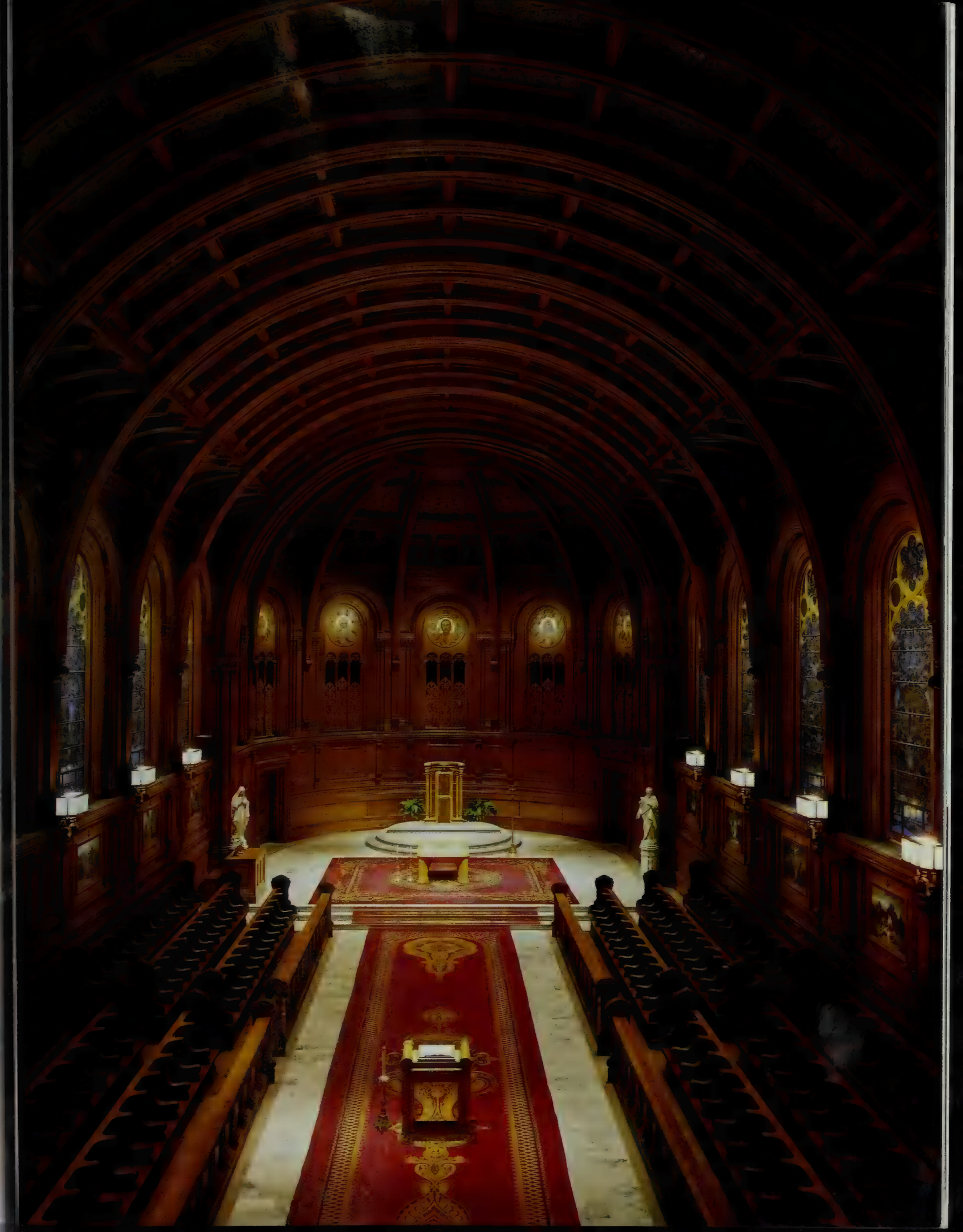
Credits
Saint Patrick's Seminary Chapel
Menlo Park, California
Owner: *The Archdiocese of San Francisco*
Architect: *Richard Zlatunich*
Lighting Designer: *Ross De Alessi*
Consultants: *Brother Joseph Aspell, liturgy; Reverend Peter Gray, art; Jenny Sherman, de Young Museum, art restoration*
Electric Contractor: *Jim Smith, Smith Brothers*
Craftspeople: *Bacigalupi Studios and John Burt, furniture makers; Schoenstein & Company, organ builder*
General Contractor: *William J. Portman, Frank Portman Company*



ELEVATION OF SCONCE



TOP VIEW OF SCONCE



No Glass Ceilings

Even though opulence has taken a backseat to comfort and productivity in corporate office design, lighting continues to receive special attention from designers. In three corporate interiors

© *Eduard Hueber photos*



Lighting for the "Factory as Think Tank"

"Better light for the people" is the motto of Zumtobel Licht, an Austrian lighting manufacturing firm, whose offices for 130 employees as well as information and training centers, were constructed in the loft of an existing manufacturing building. Juerg Zumtobel, chairman of the board of Zumtobel Holding, says, "the new office solution should stimulate the motivation and quality of life of those working here. Openness and transparency are trademarks of this work environment." The original high ceiling of th factory loft has been brought down to ■ mor manageable scale by the addition of an undu lating dropped ceiling. The office spaces (above) are illuminated through the use of a pendant-mounted direct/indirect fluorescent fixture and additional daylight entering bro expanses of glass. The offices and "light forum," an auditorium and conference room area, are entered through a foyer (above right) which contains a bar and café seating. The space is decorated by panels of bright

projects presented here, decorative lighting is integrated into ceiling treatments to produce a number of pleasing visual effects, as good task lighting remains a high priority. Charles D. Linn



d, yellow, and brushed aluminum, and illu-
nated by compact fluorescent downlights,
d a suspended elliptical cloud, backlit in
nite cold cathode and dotted with cone-
aped downlights. Pairs of compact
orescent downlights, whose apertures are
vered by etched glass disks, are installed
the underside of a bridge (right) that
ans the "main street" that intersects the
aces. A lighting management system is
ed to automatically monitor and balance
y- and electric-light levels in the open
ice areas.

Credits
Zumtobel Offices
Dornbirn, Austria
Architect: *Baumschlager, Eberle, Grassman*
Lighting Designer: *Zumtobel Licht*
Electrical Engineer: *Ing. Göstl*



De-con lighting flavors coffee warehouse loft

The offices of Babcock & Brown, a San Francisco investment banking firm, have a deconstructivist flavor that is complimented by the lighting design. Lighting designer Tom Skradski worked with a minimal budget, using generic egg crate-style troffers, unadorned fluorescent strips, exposed low-voltage lighting, and high-bay metal-halide warehouse pendants to light the space, located in the top floor of a former coffee warehouse.

The reception area and conference room (top) use low-voltage lamps that are locked onto a cable-mounting system and aimed up onto a curved aluminum panel. The locking mechanism allows lamps to be replaced without also having to be refocused. In a conference room (center), a similar system hangs under and over a suspended "airfoil" ceiling that floats in front of a view of the Bay Bridge. Low-voltage lamps aimed down an adjacent column covered with coated, post-formed laminate cause dime-sized dots of exposed brushed aluminum to glow.

Open-office areas (bottom) are lit using T8 task lights and furniture-mounted uplights equipped with 50-watt compact fluorescent lamps, to minimized veiling reflections on VDT screens. The translucent-fiberglass roof of a private office (opposite) takes on the glow of indirect-fluorescent lighting installed inside. The curving, main path through the space is traced by metal halide pendants, while ambient light is provided by compact fluorescent downlights. Walls are washed by MR16 downlights.

Because both the state of California and the client required energy efficiency, T8 fluorescent lamps and electronic ballasts were used on the project. Incandescent circuits have in-line dimmers to extend lamp life.

Credits

Babcock & Brown
San Francisco, California
Architect: *Studios Architecture—Peter Van Dyne, design studio director; Daryl Roberson, consulting principal; Cynthia Knapton, project designer; Cathryn Barrett, project designer*
Lighting designer: *Lumenworks—Tom Skradski, principal and designer*
Electrical engineer: *McMahon Electric*
Contractor: *Rygan Associates*

© Paul Warchol photos









Lighting helps emphasize openness

The design team for Bell Atlantic took its design direction from the corporation's emphasis on clear and open communication. In conference center spaces like "the forum" (top), and a large dining room (opposite), where highly-figured ceiling coffers provide soft lighting and are in scale with high spaces where large groups gather.

The giant coffer in the forum is uplit by 3000K, compact fluorescent indirect fixtures fitted with a very wide distribution system, concealed atop the grid of beams. 150W PAR flood downlights within the coffer were fitted with black cones, to prevent glare from being reflected from the indirect fixtures. Mega-scale "wall sconces" (center) that appear in both the forum and cafeteria are made of fluorescent lamps covered by secondary diffusers encased inside a perforated-metal sheath.

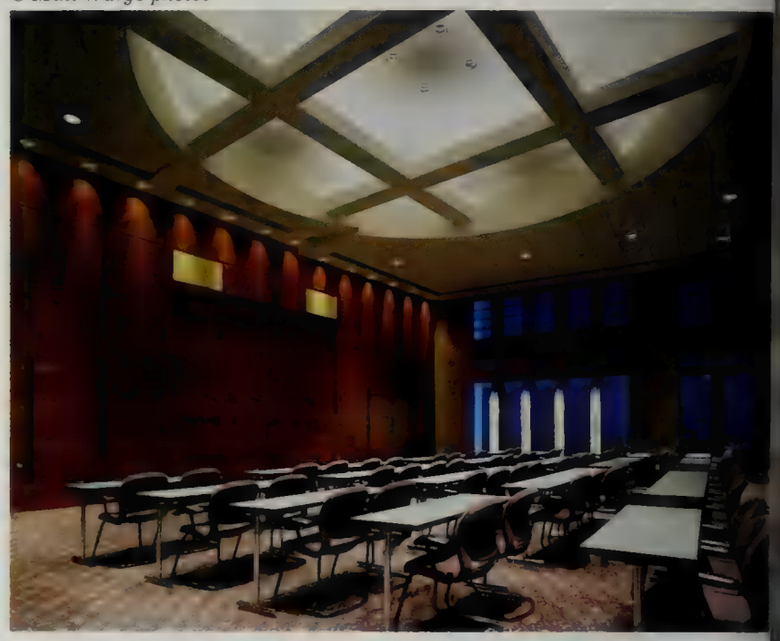
The dining room ceiling has a pattern of square coffers, each enclosing a custom glass disc pendant that provides a combination of direct and indirect light. The interior of the coffers is illuminated by compact fluorescent quad lamps. In the center of the underside of the glass diffusers, a 150-watt PAR flood provides direct downlight for the space. The wall sconces visible on the mezzanine at the rear of the space are made of a composite granite and frosted white glass.

In a typical conference room (bottom) pendants with white glass diffusers and pairs of halogen lamps and recessed clear-cone MR16 accent lights illuminate the conference room table. Similar recessed fixtures fitted with diffuse glass lenses wash the artwork over the credenza. In the corridor, artwork is illuminated with semi-recessed wallwashers fitted with hoods, while on the opposite side, wood paneling is washed by recessed, adjustable clear-cone MR16 accent lights with spread lenses.

Credits

Bell Atlantic Corporate Headquarters
Philadelphia, Pennsylvania
Interior Designer: *The Hillier Group—Barbara Hillier, principal; Robert Blakeman, principal-in-charge; Bradley Landmann, project architect; Paul Heflin, Kevin Robb, Brett Webber, design team*
Electrical Engineer: *Cosentini Associates*
Lighting Designer: *Spiden R. Shemitz Associates, Shemitz Lighting*
[illegible] project manager

© Matt Wargo photos



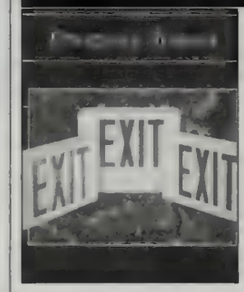






VISA
Lighting Solutions for Universal Design
LIGHTING
8600 West Bradley Road
Milwaukee, WI 53224
on inquiry card

Product Literature/Lighting



412. Energy-conscious exit

A tri-fold, color brochure highlights a variety of emergency system exit lights, which are said to consume up to 96 percent less power than standard incandescent types. Three LED models are featured, along with details, charts, and diagrams illustrating low energy use and minimal maintenance requirements. USI/Prescolite, San Leandro, Calif.



413. Ballast report update

This 48-page booklet from the Lighting Research Center displays operating statistics about electronic ballasts in charts and graphs. The newest version includes performance data on the non-dimming variety and information on reliability and effects on lamp life. Rensselaer Polytechnic Institute, Troy, N.Y.



414. Piping enhances lamps

A series of traditionally designed, incandescent, steel lamps is illustrated in this four-page color brochure. Outlines PVC-material shade colors and stem finishes for bedside, table, and floor models. Prices included. Lighting compatible with a broad range of interior-decorating styles. Artemide/Sidecar, Farmingdale, N.Y.



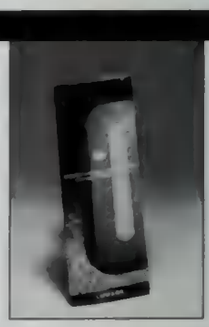
415. Workplace lighting

Industrial luminaire options are the focus of a 20-page color booklet. The lights are said to reduce glare and provide balanced horizontal and vertical illumination by using a prismatic glass refractor. Along with three lighting distributions, five fixture choices are available in regular and compact sizes. Holophane Lighting, Inc., Newark, Ohio.



416. Illumination examples

This 24-page Concept Brochure, a second edition, contains more than 50 color photos of indirect lighting in working environments such as the O'Hare International Terminal and De Paul University. High-efficiency optics are said to permit wider spacing of fixtures. SPI Lighting, Inc., Mequon, Wis.

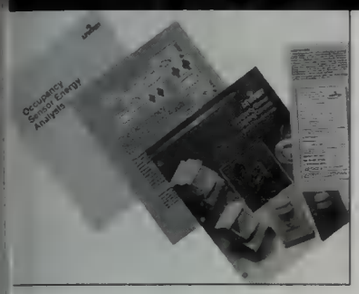


417. Lighting the night

Designed for specifiers working on projects in vandalism- and crime-prone areas, this handbook examines high-abuse lighting, how to use illumination to deter crime, and looks a selection standards. Includes information on energy-efficient lamp sources and utility rebate programs. Cooper Lighting, Grove Village, Ill.

For more information, circle item numbers on Reader Service Card.

Product Literature/Lighting



418. Occupancy-sensor analysis
free energy-audit program is
esigned to reduce lighting-energy
osts in commercial facilities. A work-
heet guides a walk-through to
apture current light-source and
sage data. These are used to gener-
e a customized, comprehensive
ccupancy-sensor report showing
rojected savings. Leviton Mfg. Co.,
c., Little Neck, N.Y.



419. EPACT guide
An illustrated folder highlights the most important features of the National Energy Policy Act, explaining the new energy-efficiency lamp standards in terms of efficacy and CRI. Charts display non-complying full-wattage fluorescent and incandescent sources, matched with good, better, and best substitution options. Philips Lighting Co., Somerset, N.J.



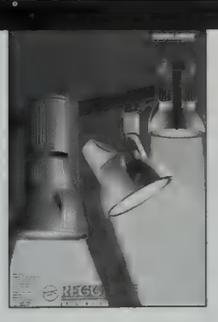
420. Wall-mount luminaires
rochure on The Wall Director
scribes the line as a versatile light-
system that is adjustable,
ertible, and capable of total-cutoff
mination. Exterior fixtures pro-
e building-area lighting without
le clutter." Beams can be aimed
hin a 10-deg. range while lit; offer
e II, III, and IV distributions.
n Lighting, City of Industry, Calif.



421. UV-free lighting
A new product, the LSI fiber-optic system consists of a remote, 150W metal-halide illuminator, "tails" of light-carrying glass optical fibers, light bars, and recessed-spot fixtures designed for unobtrusive, UV-free museum, retail, display, and residential lighting. Brochure includes detail drawings and photometrics. Lighting Services, Inc., Stony Point, N.Y.



422. Emergency lighting
lorful, 46-page catalog covers all
lels of Italian-designed emer-
y illumination devices for a range
plications. Line includes Pratica
escent fixtures for maintained,
-maintained, and energy-saving
ications; handlamps for movable
during power failures; and
tal-resistant lighting. Beghelli,
Jacksonville, Fla.

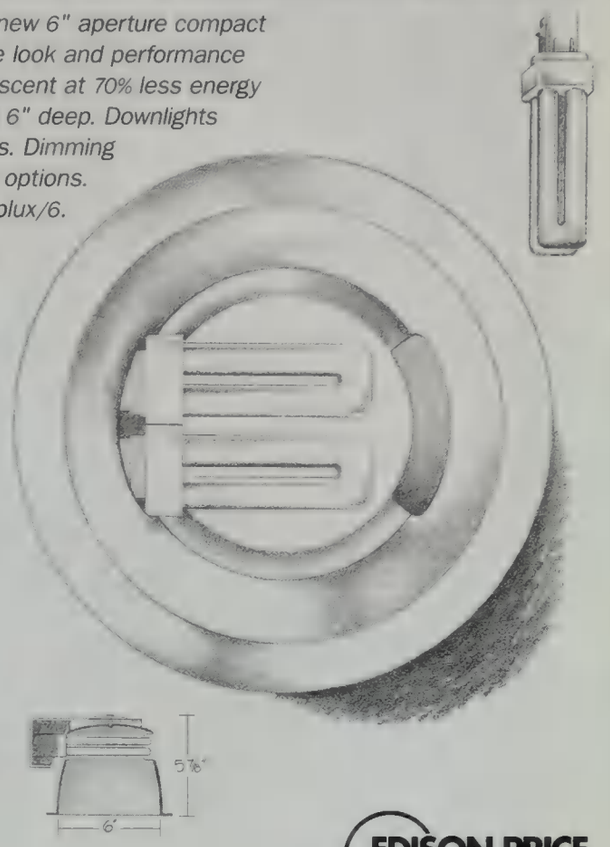


423. Versatile track fixtures
Catalog illustrates Sunlights, designed by maestro Fabio Reggiani but made in America. The adjustable wall-, ceiling-, and standing-lamp-mounted spotlights take linear and single-ended tungsten-halogen and HQI lamps. Beam-spread, ballast, and accessory data given. Reggiani USA, Inc., New York City.
Continued on page 39

For more information, circle item numbers on Reader Service Card.

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Duplux®/6: our new 6" aperture compact fluorescent. The look and performance of a 6" incandescent at 70% less energy cost. Less than 6" deep. Downlights and wallwashers. Dimming and emergency options. Why resist? Duplux/6. For information and the name of your local representative, please call 212-838-5212; or fax 212-888-7981.

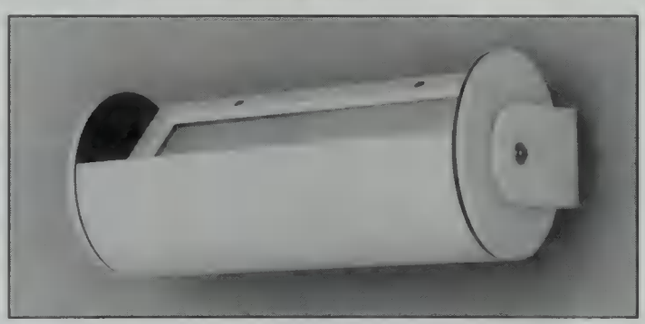


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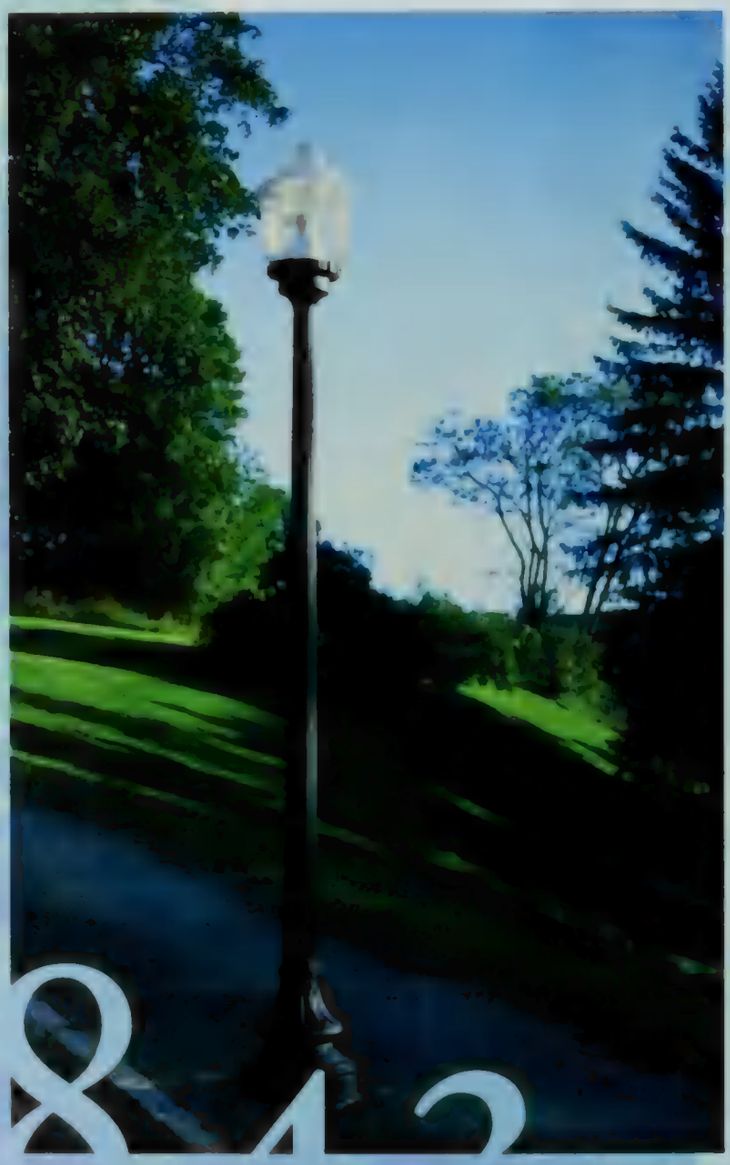
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Product Literature/Lighting





424. Decorative downlights

A color fold-out brochure introduces compact-fluorescent downlighting designs that stray from traditional styles. New options include a matte finish for an anti-iridescent reflector, small apertures, wallwashers, lenses, louvers, and clear-patterned, cobalt-blue, or frosted light-diffusing plates. Spec information provided. Staff Lighting Corp., Highland, N.Y.

425. Exterior light guide

A planning checklist, creative placement ideas, and lamp and fixture selection guidelines for outdoor home lighting are outlined in a 12-page color pamphlet. Contains tips on security and safety, suggestions for silhouetting, shadowing, and grazing, and facts about light output, efficiency, and energy savings. Hubbell Lighting, Inc., Christiansburg, Va.





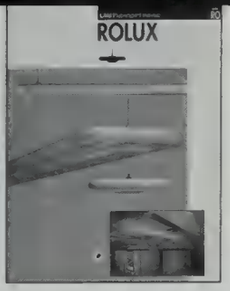
426. New metal casings

A catalog displays expanded collections of incandescent, fluorescent, low-voltage, and HID downlights and trims. Recessed housings for installation in insulated ceilings and remodeling housings for existing, finished ceilings are among the conditions. White ceiling trims complement the lines. Capri Lighting, Los Angeles.

427. Compact collection

The 1994-95 line of compact-fluorescent downlighting is shown in a 92-page color catalog. The products listed tend to fall in the upper price range. Luminance information and construction features are spelled out for each style. Includes sections on attachments, dimming, and emergency lighting. Wila Lighting, Inc., Miami.





428. Garnishing sconce

Details on the new, decorative Mariner security lighting series are provided on a catalog insert. A cutaway diagram shows the dimensions of this economically priced fixture for HID, fluorescent, and incandescent sources. Includes description, a list of suggested applications, and ordering information. Eclipse Lighting, Inc., Chicago.

429. Linear system details

An indirect linear lighting system is described in an eight-page color brochure that also highlights the steel roll-forming process used in production. Charts and graphs explain candlepower, coefficients of utilization, pattern connectors, and typical classroom application. LAM, Santa Ana, Calif.■

For more information, circle item numbers on Reader Service Card.

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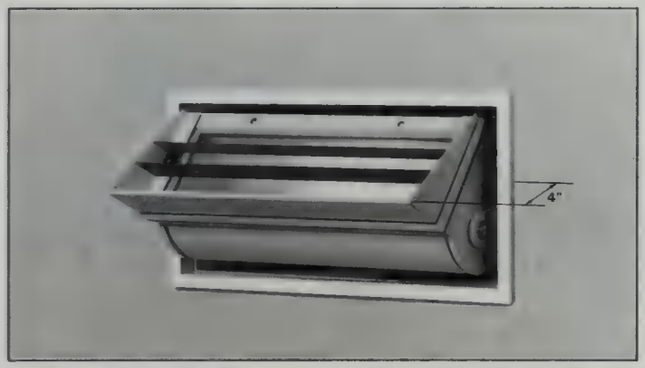
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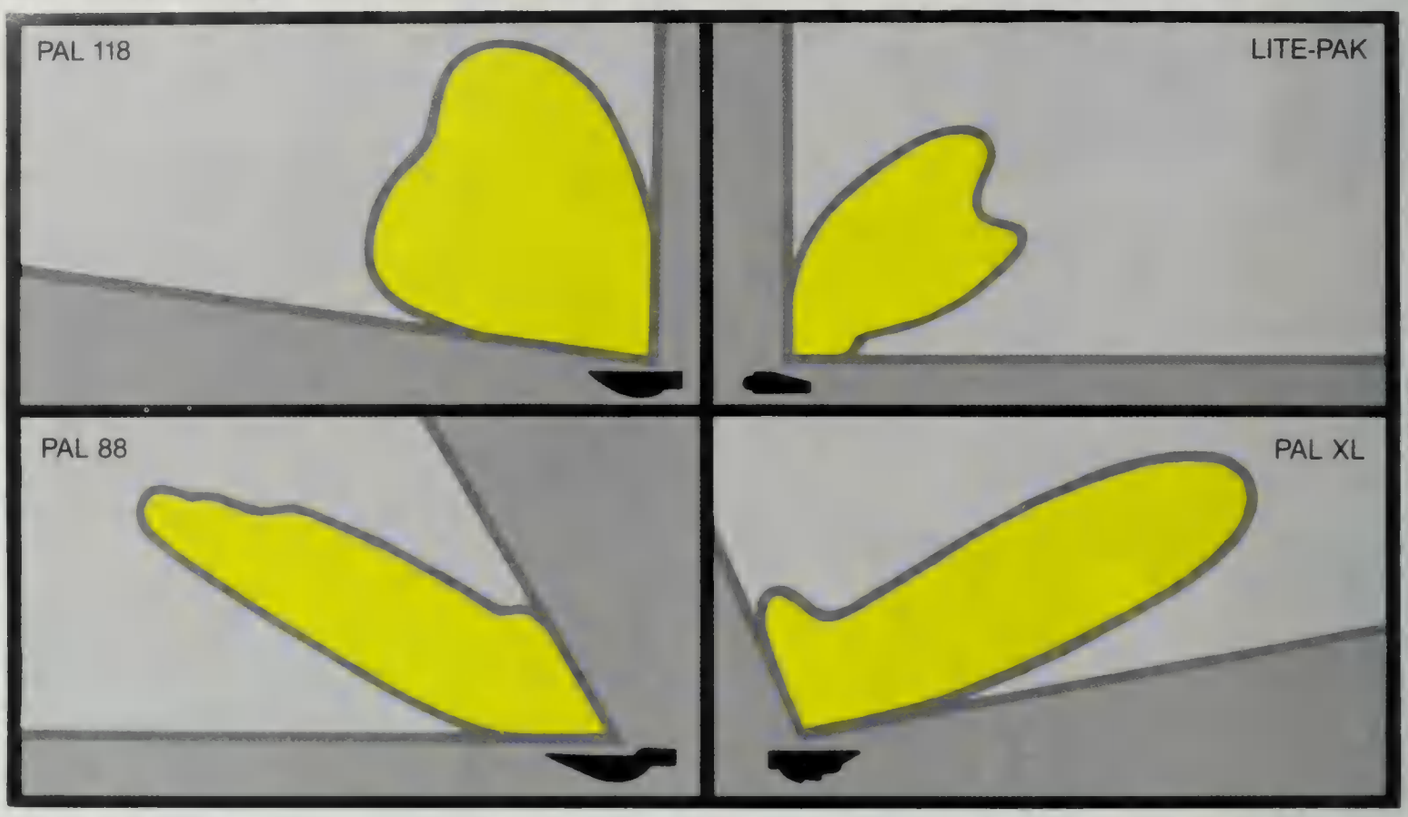
The Americans with Disabilities Act (A.D.A.) requires that in public traffic areas, wall mounted luminaires between 27 and 80 inches above the floor not protrude more than 4 inches. **elliptipar**® A.D.A. luminaires help lighting designers meet this requirement with exceptional performance. With tungsten halogen or H.I.D. lamps from 70 to 150 watts, the unique **elliptipar** asymmetric reflector creates uniform, glare-free illumination. Designed for easy installation into most stud frame walls.

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Manufacturer Sources

For your convenience in locating fixtures and components shown in feature articles, RECORD has asked the architects and lighting designers to identify the products specified.

Pages 18-19
James S. McDonnell Hall, Washington University
Berg/Howland Associates, Lighting Designer
Kallmann McKinnell & Wood Architects, Inc.
Fluorescent pendants: Litecontrol Corp. Halogen pendants: Kramer Lighting. Fluorescent wall-wash fixtures: Elliptipar. Track lights: STAFF Lighting.

Pages 18-19
Bechtel Lecture Hall
Berg/Howland Associates, Lighting Designers
Amster Woodhouse MacLean, Architects
Track lights: LSI. Fluorescent pendants: Litecontrol. Downlights: Lightolier. Sconce: Artemide. Lectern lights: CSL Lighting. Steplights: Norbert Belfer. Controls: Lutron. Exits: USI/Prescolite.

Pages 26-29
Chapel, Saint Patrick's Seminary
Ross De Alessi, Lighting Designer
Richard Zlatunich, Architect
Recessed downlights: Edison Price Lighting; USI/Prescolite. Quartz and fluorescent uplights: Elliptipar, Inc. Track lighting: LSI. Dimming system: Lutron. Sources: GE; Osram/Sylvania.

Pages 30-31
Zumtobel Licht GmbH
Baumschlager & Eberle & Grassmann, Architect
Zumtobel Licht GmbH, Lighting Designer
Direct-indirect pendant: Zumtobel (Optos, by E. Sottsass). Downlight: Zumtobel (Sperhos, by Hartmut S. Engel). Special lighting: Zumtobel (RCE Milder Licht, by Karin Pesau). Sources: Philips; Osram. Other fixtures: BEGA.

Pages 32-33
Babcock & Brown Offices
Studios Architecture, Architect
Thomas J. Skradski, Lighting Designer
CFL downlights, low-voltage accents, and strip fixtures: Halo. Steplights: BEGA. Cable low-voltage system: Neidhardt. High-bays: Daybrite. Furniture-mounted indirects: Peerless Lighting. Low-voltage tasks: Danalite. Wallwashers and indirect ceiling lights: Columbia. Custom sconces: Nova Industries. Halogen uplights (boardroom): Lightolier. Controls: Lutron (Grafik-Eye preset).

Pages 34-35
Bell Atlantic Corporation
Sylvan R. Shemitz Associates, Inc., Lighting Designer
The Hillier Group, Architect
CFL suspended indirects: Lightolier. Baffle-ring and clear-cone downlights: Kurt Versen. Perforated-metal sconces: Custom Metalcraft. Glass pendant: The American Glass Light Co. Tungsten-halogen sconce: Yubi Kaabu. Frosted-glass pendants: Baldinger Architectural Lighting. Exits: Radiant Illumination. Halogen clear-cone downlights: Edison-Price. Adjustable accents: USI/Prescolite. White-glass-diffuser pendants: Artemide, Inc.

New products



210. Compact induction lamp
The Genura E lamp, introduced at this year's Hanover Fair, will be available to commercial and industrial users in the U.S. by the end of 1994. Compatible with existing incandescent sockets, the reflector lamp has an induction coil that converts low-frequency, 120-volt line power into high-frequency voltage capable of creating an electron-ion plasma. A phosphor coating on the inside converts the UV light of the electron/ion plasma into visible light. The new lamp combines the color values of a standard A lamp with the energy efficiencies of a fluorescent tube, with a rated life of 10,000 hours. General Electric Co., Cleveland.
Continued on page 42

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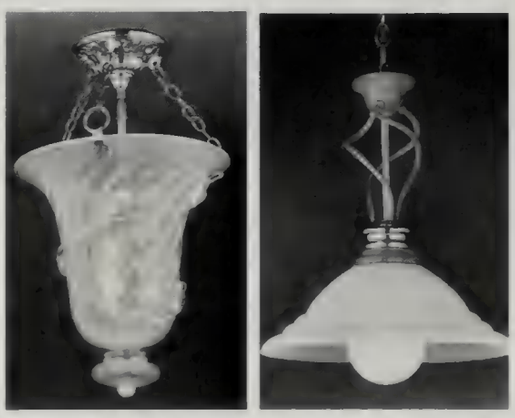
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Circle 97 on inquiry card



211. Flexible light guide

OptiFlex is a light-transmitting tubing manufactured by Rohm and Haas that was introduced this year at Lightfair. The chemical company, manufacturers of Plexiglas, say the new acrylic light-pipe material is as easy to work with as electrical wire, and that it will have many applications in commercial, architectural, and automotive lighting. Transmission efficiencies are said to be very good. Commercial quantities of OptiFlex should be available in 1995, on reels of thousands of feet. Specialty Materials Business, Rohm and Haas Co., Philadelphia.



212. Decorative pendants

Part of a new traditional and contemporary collection, hanging fixtures of twisted Venetian crystal and opaline glass offer a number of brass finishes. New Metal Crafts, Chicago.





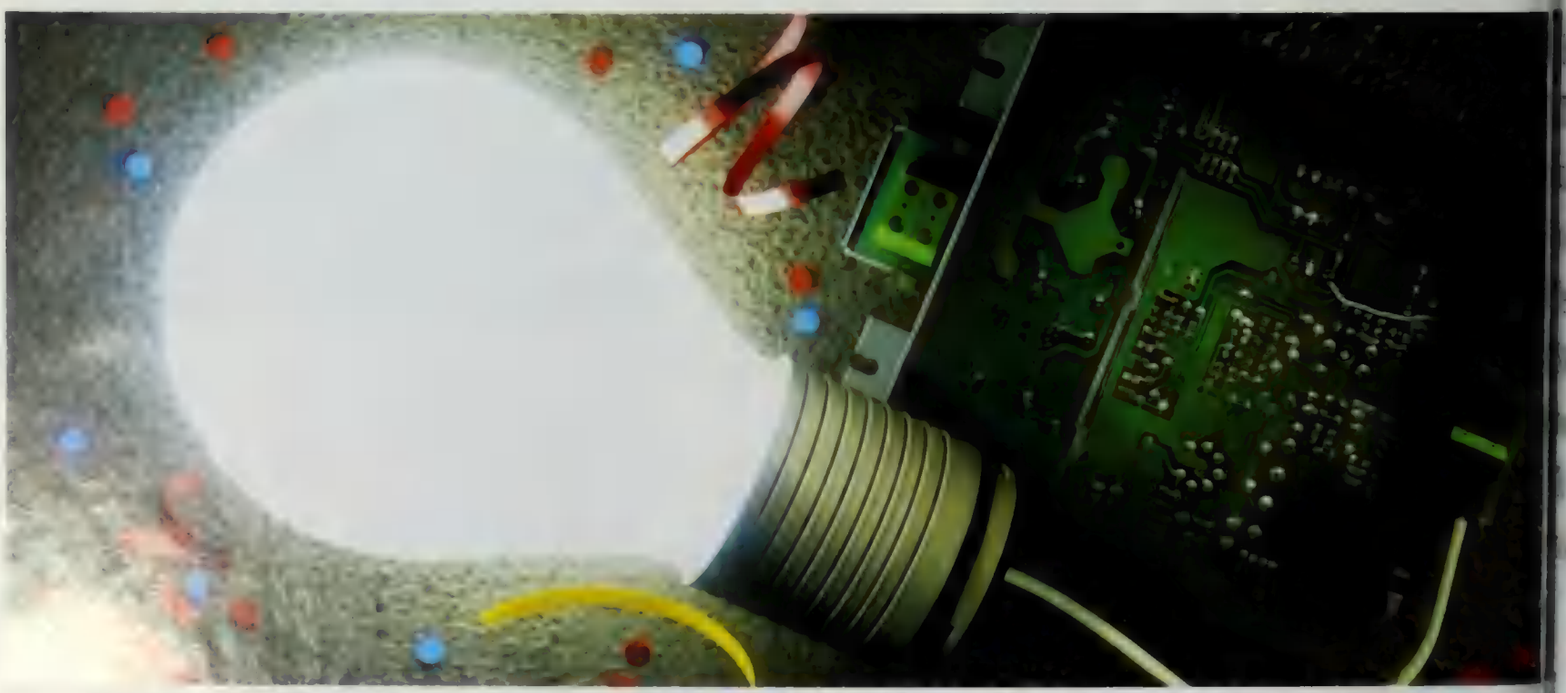
213. No-blow metal halides

Ushio of America now offers a compact, single-ended metal halide lamp that is UV protected and explosion-proof. The 70W lamp has a medium-screw base and can be used in an open fixture with a standard ANSI ballast. Lamp is made in Germany. Ushio America, Inc., Cypress, Calif.

214. Miniature downlight

A new downlight with a 4-in. aperture takes an MR16 lamp. Both line- and low-voltage models are available; trim options include a black baffle or Alzak reflectors in gold or clear. I.C.- and non-I.C.-versions are available. Ruud Lighting, Racine, Wisc.

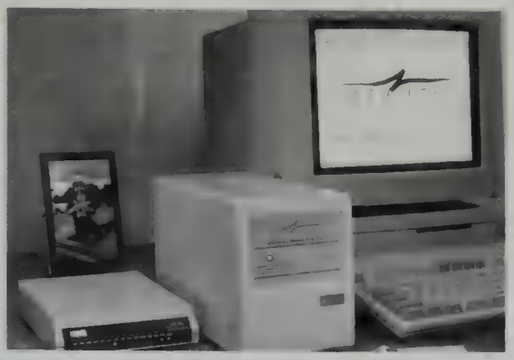
THE CENTURY WILL EXPI



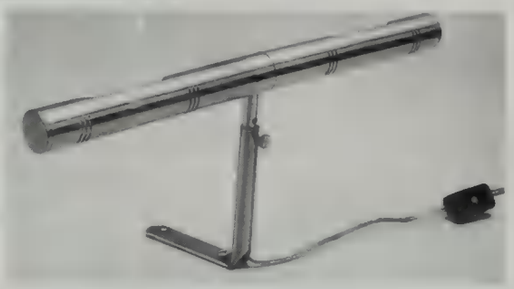
...of life 7 years continuous operation ©1994 Philips Lighting Co – A Division of Philips Electronics North America Corp.

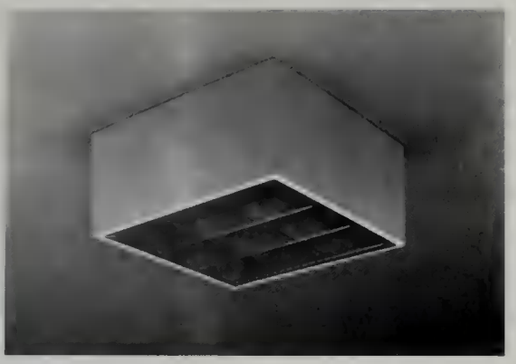


215. Cool HID fixtures
A new Mercmaster luminaire puts out 400 watts while running cooler than other HID fixtures, according to the manufacturer. Available for metal halide, HPS, and mercury vapor lamping, the high-bay fixtures are recommended for use where flammable gases, vapors, or combustible dusts are present. Housings have a corrosion-resistant epoxy finish; all exposed hardware is stainless steel. The Mercmaster III-400 line offers a range of guard, refractor, globe, and reflector options. Appleton Electric Co., Chicago.



216. Point-of-use conditioner
Sentrex OnCall standby power systems (SPS) protect equipment against power fluctuations and provide backup power from a 12V battery. Units offer noise filtering, ultrafast transfer, status alarms, and LAN interface. Wiremold, Hartford, Conn.





217. Fluorescent squares
Omega lighting has introduced a series of surface-mounted compact-fluorescent downlights with several parabolic louver, lamp, and wattage options. Units may be ordered with an emergency lighting pack that meets safety codes. Omega Lighting, Los Angeles.

218. Classic picture light
One-in. in diameter, Gallery Lights are solid brass, offered in bright and satin finishes. Fixture comes in 7- and 14-in. lengths, furnished with one or two 25W T6 candelabra-base frosted bulbs. Satco Products, Inc., Brentwood, N.Y.

Continued on page 45

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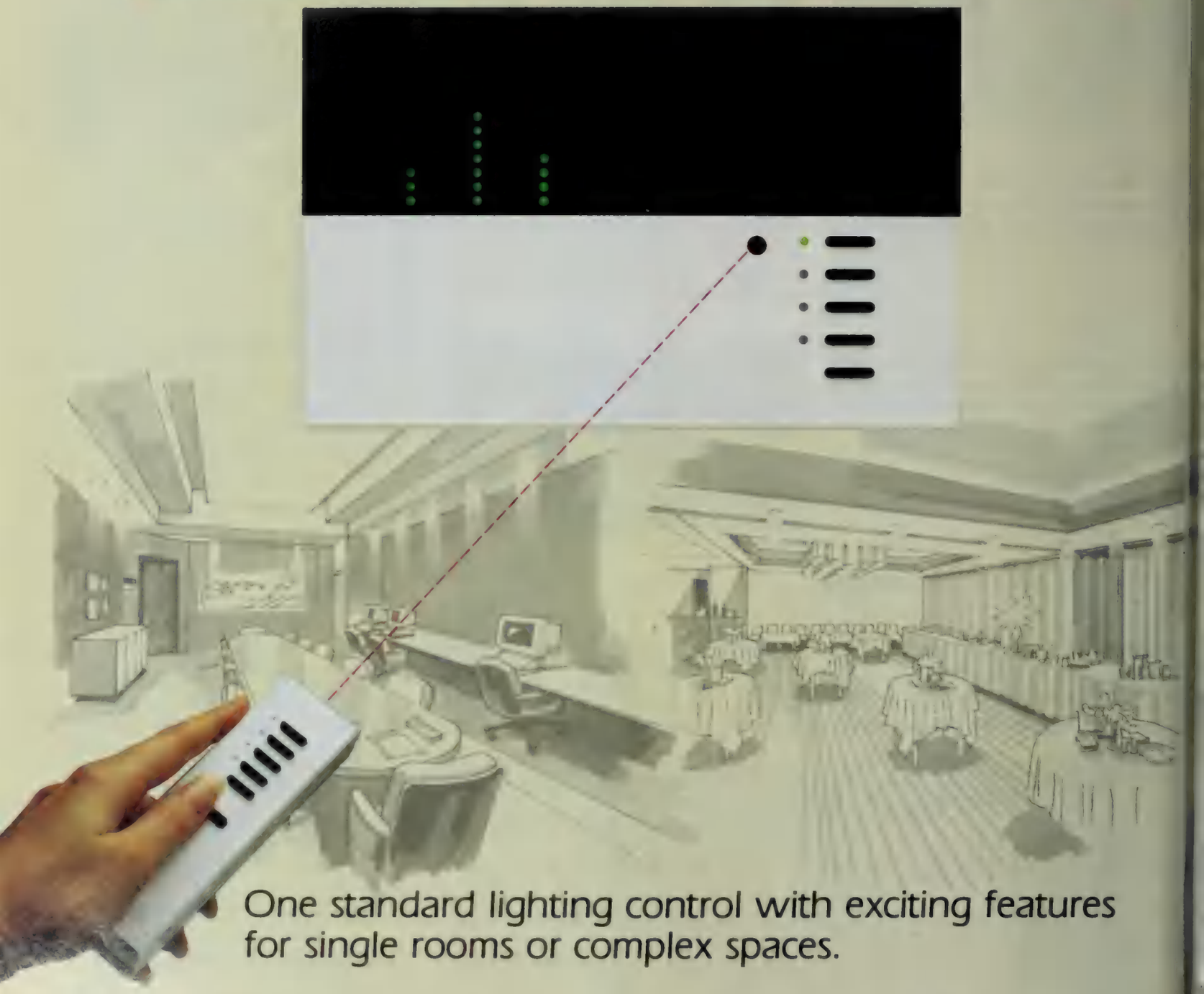
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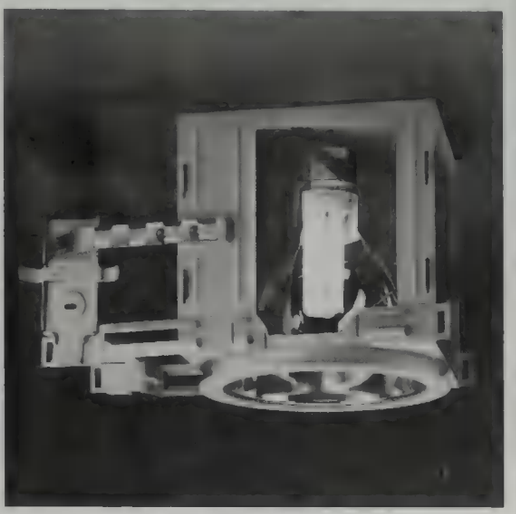
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[illegible] call **1-800-523-9466.**

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219. Garage luminaire
A new unit, Design 430 has both reflective and refractive components and is said to provide even, glare-free lighting of pavement and wall surfaces as well as uniform up-lighting of the ceiling: the overall effect is to reduce light-to-dark ratios. The fixture is classified as semi-cutoff under IES standards. Features include a quick-mount plate and hanger for snap-in installation. Quality Lighting, Franklin Park, Ill.



221. Title 24 compliant
New CBX and CBXIC versions of the Lite Box fixture for vertically oriented 13W quad lamps meet California's Title 24 energy-saving standards for home use. Diecast trims can be painted to match interior color schemes; housing permits complete submersion in insulation. Residential units are part of a downlight line with over 25 trim styles and fresnel and other lenses;USI/Prescolite, San Leandro, Calif.



220. Low-voltage uplight
Small-scale stand-alone light especially suited to spotlighting plants, the 390 has an integral transformer and 8-ft plug-in cord. Cast housing takes a MR16 lamp and accepts filters. Lamphead swivels in two planes; available in architectural bronze, white, or verde. Lumiere Design & Lighting, Westlake Village, Calif.



222. Ultra-violet fixtures
A new model long-throw Wildfire illuminator, the WF-250 comes in both indoor and outdoor versions, with beam spreads of either 20-, 50-, or 90-degrees. Housings are extruded aluminum; fasteners are stainless steel. The fixture takes a 250W lamp specifically designed for maximum UV output, to illuminate fluorescent materials at distances from 10 to 75 feet. Projector comes supplied with an integrated ballast, safety cable, and bulb. Wildfire, Inc., Los Angeles. ■

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(G) General Building & Renovation
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(I) Industrial Construction & Renovation
(L) Homebuilding & Remodeling
(D) Contract Interiors

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